COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

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Interpreting the Coronado Decision

OPINION on the meaning and effect of the decision of the Supreme Court in the Coronado case last week varies. The *New York Evening Post* thinks "No new principle is embodied in the . . . decision that labor-union funds are assessable for damages." The *Post* seeks to find some aspect of victory for the labor unions in this decision and locates it in the "ruling that they [the national unions] are not liable for local action which they did not incite."

The New York Times, on the other hand, considers this the "first case in which it has been held that unincorporated unions are responsible to the law," the Danbury hatters case having been the first in which it was held that individual unionists are answerable with their persons and property for unlawful conduct.

"It is sound social and legal philosophy which requires that responsibility go hand in hand with power," according to the *New York Journal of Commerce*, which adds: "There is nothing in the Supreme Court's stand which can be reasonably construed as discrimination against labor." The *Herald* concludes that "the very big thing is that everybody now knows where labor unions, labor individuals and all stand in respect of these laws of the nation."

Labor is far from satisfied with the decision. Mr. Gompers is credited with the statement that "this decision, which comes as a climax of decisions of the United States Supreme Court, . . . is a blow at the very foundation of the organized labor movement in America." For the first time in the history of federal decisions, he said, "the court has laid down the principle that a voluntary organization, not instituted for profit, is liable for damages for any act committed by one of its members, or groups of members, no matter how far related they may be in distance or supervision." Senator Lafollette issued a statement in which he pointed out that "the court went out of its way to change the law as it has existed in this country since the beginning of the government, that unincorporated associations, such as are involved here, could not be sued as an entity." Although the court set aside the money judgment against the union, he thinks the decision "is the most ominous in what it foreshadows for the future of the union-labor movement in this country."

Samuel Untermyer considers the decision merely an extension of the precedent in the Danbury hatters case and holds that it was "logically and reasonably certain that this principle would be extended to unincorporated labor unions." He advises labor unions now to incorporate to shield the individuals from personal liability, "except where the damages can be shown to have been the direct result of the acts of individual members, in which event the liability would be limited to them." He adds that he has never been able to understand the "intense hostility of labor unions to incorporation. Its terrors are purely imaginary."

The American Federation of Labor Weekly News Service of June 10 says editorially: "The Supreme Court of the United States has ruled that unincorporated trade unions can be sued. The decision means that big business has won its objective in its long campaign for trade-union incorporation."

The way is now open, it seems, for employers to hold union employees to their contracts. Suits for damages arising from strikes in violation of contract, such as have characterized the coal fields in the Middle West, may now be pursued with some prospect of holding the union itself liable. It has been a stock argument of the miners' union against incorporation that it would be unfair to hold it liable for acts of individual members the selection of whom is the consequence of employment by the operators and not necessarily of the union's choice. The answer to this, of course, is that if a man employed by the company is not a safe risk for the union, he need not be allowed to join. Policing the membership is within the power of the union if it will release its hold on the check-off and the closed shop. Otherwise it must hold itself liable for the acts of all who are forced to become members.

Will Retailers Jeopardize Public Confidence in Coal Industry?

THOSE retail dealers who have registered complaints with members of Congress against the Hoover plan of holding down coal prices are either without understanding of what that plan has accomplished already and is designed to do, or they are making a case before the public—their customers—prior to taking unfair advantage of the situation.

The plain fact of the matter is that after simmering throughout April, prices took a sudden precipitate upturn early in May. In manner of development and in steepness of ascent the rise was in every way comparable to that of May, 1920. Whereas at the instant of such a market, requirements for consumption and demand are real factors, the point is soon reached where fear and panic rule. Feverish buying in a wild scramble for coal in which price is disregarded and the bidding becomes furious is a certain consequence of the conditions and circumstances that surround a market as that now with us. When, in the middle of May, Mr. Hoover initiated his move to restrain prices, New England and the Northwest had not become infected with the fear of shortage. When these markets get out of hand, the lid is off. They were both on the point of breaking into the bidding contest when, through the intervention of the government, the tide was turned.

The steps so far taken to hold matters in check have

in no wise reduced the consumption of coal or increased the output. The fundamental statistical facts are as they were when the market was starting its abrupt rise. What, then, has happened? Nothing, save that public confidence has been restored. It cannot even be held that the arbitrary prices are holding things down, for the market has been below the level set by Mr. Hoover. Production is well below actual consumption, which is increasing. Stocks are disappearing and the country is piling up a future demand for coal that will with difficulty be assuaged later when all the mines are in operation.

The position of those retail coal dealers, and of any jobbers and operators as well, who are attempting to sprag the wheels is calculated to destroy confidence in what Mr. Hoover is trying to do. Remember that Mr. Hoover is the first government official since Franklin K. Lane who has openly expressed his confidence in coal men, and Mr. Lane did not get away with it. Let Mr. Hoover fail in his efforts and the coal industry will face the unpleasant alternative of federal regulation in some form.

Fitting the Industrial Figure

THE art of fitting does not consist in making all parts of the garment fit snug. A little looseness in places meets needs which movement makes necessary; but where shall this fullness be?

Without professing to set the fashions we feel confident that the garments of the coal industry before long will be worn full where they have been loose and loose where they have been worn full. We have hitherto been generous in the supply of man power for mining and skimping in all other kinds of man power. But with the advent of the loader came the necessity for changes which our new-found fashions will reflect.

Walter Calverly senses this in his article this week. The locomotive is to be in attendance on the shovel—to subordinate its efficiency to the shovel's needs. The first consideration is not to have a low gathering cost but to provide for the prompt removal and placement of cars almost regardless of cost. However, it will be possible by the concentration thus resulting to make innumerable economies in operation, yes, even in main-line haulage.

The bulk of "mining work" is mining. If it is to be done by men who are paid by the day, the operation of mining must control transportation. Unfortunately, we have acquired a way of seeing transportation first, last and all the time. With a new method of loading coal and a new way of rewarding those that load it and with machines that entail interest and depreciation charges that exceed the wage costs a new viewpoint will be taken. In a sense we shall not be able to see the wages of the men because the interest and depreciation of the machine will hide all other considerations.

An illustration of the tendency to ignore labor cost is seen in somewhat exaggerated form in stripping operations by the casting method. Were it not for two considerations it would pay to continue stripping till the job was completed and the machine could be transferred to some other place. The operator could afford to overlook the temporary lack of demand for coal. In fact some do already with some limitations. The two unfortunate circumstances which prevent such steady activity till the stripping is done are that an area can be stripped only if a place to cast the displaced cover is provided and that unless the coal is removed with reasonable promptness that casting place cannot be found and stripping must soon cease.

How Much Is Invested in Coal?

CAPITAL investment in the bituminous-coal industry is found by the Federal Trade Commission, in a recent report to Congress, to be in round numbers one and two-thirds billions of dollars. The commission considers that without deductions for capital in excess land holdings the average is $3.12 per ton of average production (533,000,000 tons) for the three years 1918-20. On the same basis the Census returns for 1919 show two billions of capital and an average of $3.75 per ton. These figures are to be compared with those taken from the income tax reports of operators by the Internal Revenue Bureau for the Robinson Bituminous Coal Commission. For a representative portion of the total output (and this is all that the Federal Trade Commission data are presumed to cover) the Treasury's figures, which were for 1918, showed $2.60 averaged for the output in that year, but calculated to the average tonnage for the three years used by the commission, $2.85, the lowest figure of all.

That is, for 31 per cent of the total the Treasury reports $471,000,000, or the equivalent of one and a half billions, against the Census two billions, and Trade Commission one and two-thirds billions. The Census is the only report that pretends to cover the entire industry, but its returns, as stated in the published reports, "do not show the actual amount of capital invested." This is explained by saying that although the data as to capital called for on the Census schedules exclude "securities and loans representing investments in other enterprises," the "reports received in respect to capital, however, at both censuses, have in so many cases been defective that the data compiled are of value only as indicating general conditions." The shortcomings of these data are explained as a consequence of defective or inadequate accounting.

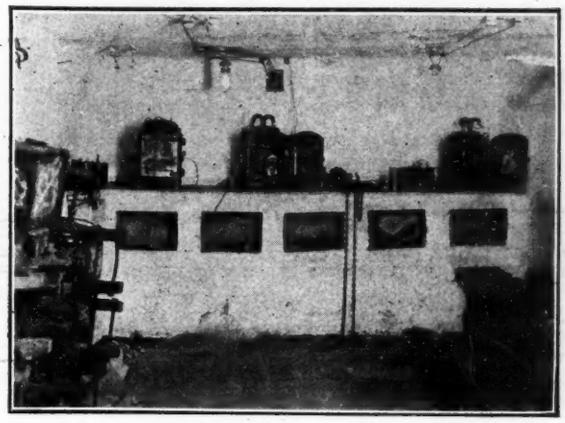
The apparent disparity between the averages and totals reported by the Income Tax Bureau and the Federal Trade Commission must be accounted for on other grounds. The tax bureau figures are a straight abulation, presumably before extensive or complete xamination and revision by accountants. The failure of proper accounting on the part of the reporting companies will be reflected here also, for this lack is notorous and is not confined to the coal industry; but the discrepancy is on the other side—the total is too low. Many a dollar actually invested in coal and plant does not show here because it is "plowed in" profits of former years and the books of the reporting company have not been corrected as allowed by the regulations of the government.

The Trade Commission made a serious effort at revision of returns and publishes a figure somewhat above that of the tax bureau and considerably lower than the Census. Both because it falls between the other estimates and because it is the result of a studied effort it is to be considered as the best figure for investment in soft-coal mining. It appears significant that despite the difference in totals as to investment, the commission and the tax bureau disclose the same figure of 18 per cent as the average return on investment for the year 1918, before deductions of federal taxes.

Safety and Economy Provisions at the Francis Mine

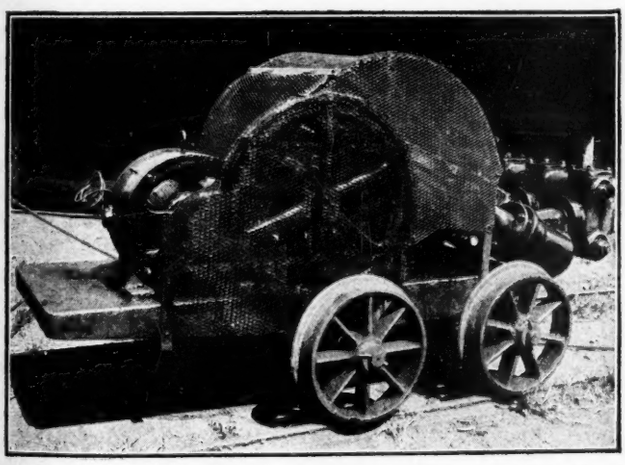
Overcast Has Explosion Doors—Underground Workshops Made Fireproof—Cars Dispatched by Telephone

By A. F. Brosky*
Pittsburgh, Pa.



THE Ford Collieries Co. has three operations—the Benjamin, the Berry, and the Francis mines—all located at Curtisville, Pa., fifteen miles northeast of Pittsburgh. Before the strike the first two developments worked six days a week, but the last named, the Francis Mine, has not operated since January. Advantage has been taken of the prolonged inactivity at this mine to put company men to work on a general renovation of the underground workings. Entries have been cleared of fallen rock, timbers replaced, where necessary, and work of a similar nature performed. All equipment has been completely overhauled, so that when a turn for the better does come, operation may not be interrupted by either petty or serious breakdowns. Thus the mine pumps, one at a time, have been brought to the surface to be carefully repaired in the machine shop.

A change in the ventilation system has been planned. In accordance therewith many new brattices and stoppings and one overcast recently have been erected. This overcast has at least one detail of construction not frequently encountered. This is the insertion of a doorway in one of the side walls. These walls are of concrete and 22 in. thick. They are surmounted by a roof formed by 40-lb. I-beams on the adjoining flanges of which rest ordinary rough bricks, laid with their long axes perpendicular to the beams, which are set on approximately 10-in. centers. The doorway is an opening of about 3 x 4½ ft. The frame is of wood, as are also the two doors, which are built up of 1-in. stuff. Mr. Mathewson, mine foreman, saw the advantage of providing easy access from one cross entry to the other. These doors, while sturdy enough to prevent leakage of the air currents, are frail enough to provide an easy vent for the force of an explosion, should one occur. Such a provision will do much to prevent the wrecking of the overcast. This might be completely shattered, if constructed rigidly.



PUMP BROUGHT TO SURFACE FOR REPAIR

The mine pumps were brought one at a time to the surface to be repaired. Note the guard made of heavy steel mesh bolted to a light band-steel frame by which the otherwise exposed gears are protected.

At a point convenient to the two main sections of the mine has been placed a small electrical repair and storage room, measuring approximately 20 x 30 ft. The closing wall, extending along the entry, is of hollow tile, plastered with cement both inside and out. The interior walls and coal roof also have been well plastered with cement, after which the whole interior was whitewashed to facilitate illumination. Entrance is gained through a steel door, thus rendering the room practically fireproof.

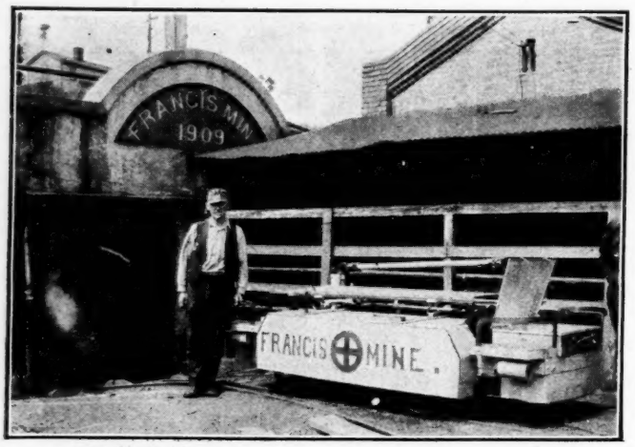
Work Benches Concrete and Wholly Fireproof

Poured concrete work benches extend along two sides of the room. These are provided with numerous bunkers or containers which may be used for storing equipment or parts. In this small shop minor electrical repairs are performed such as switches or telephones require. Possibly the greatest advantage this shop possesses is its storage facilities.

The stored material includes bonds, lamps, wires, switches and insulators. In many instances such material within a mine is kept in manholes or somewhere else convenient to the workmen. In this way it not infrequently is scattered throughout the entire workings, no record is kept of its whereabouts, and it sometimes is forgotten so completely that it lies unused until someone accidentally stumbles upon it. This repair room was built by a company man at odd times when other duties did not require his attention.

Fifteen telephones are placed at various points throughout the mine. At the main bottom is located a central telephone station or exchange in charge of a dispatcher, who directs all haulage traffic throughout the operation. The equipment thus controlled includes two 13-ton and eleven 6-ton locomotives. The telephones serve an additional purpose besides that of directing the locomotives—they provide a means for transmitting the daily records of each locomotive crew.

*Bituminous editor, *Coal Age*.



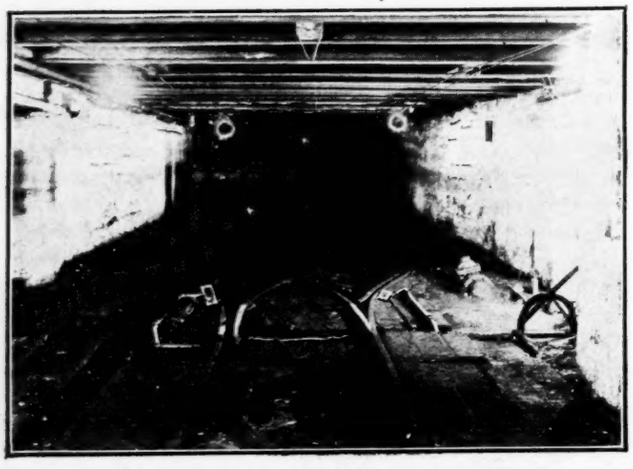
MINE AMBULANCE AT PORTAL OF FRANCIS MINE

Time is an important element in mine-rescue work. In itself a locomotive summoned by telephone from the motor barn and given right of way by telephonic dispatching service, this ambulance arrives promptly and removes the man from the mine with celerity and relative comfort.

As an example of this use, suppose that a large locomotive drops a trip of empties in one of the main sections and picks up a loaded trip. The motorman, before leaving, is required to telephone to the dispatcher, that he may be given right of way to the main bottom. Suppose that, soon after his departure, a gathering locomotive pulls into the storage track with a string of loads. The motorman of the smaller locomotive communicates with the dispatcher, giving the number of loaded cars he has run into the siding. The dispatcher then instructs the motorman of one of the main haulage locomotives as to the number of empties he shall leave at this parting and at other given points.

Careful Records Are Kept

The dispatcher makes a record, on a large tally board, of the number of loaded cars gathered and the number of empties dropped, together with the location of each trip of the respective motors. Records are thus kept of the individual trips of the several locomotives. Those of the two large haulage motors are made when they pull into or out of the main bottom. Each crew must make out a daily report covering its individual trips and the total for each day, to be checked against the report of the dispatcher. This latter is a duplicate of the tally values, totaled and presented in proper arrangement.



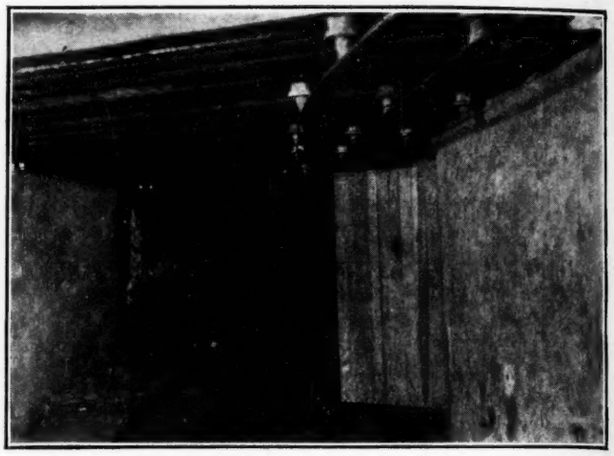
SHAFT BOTTOM ON SIDE FOR LOADED CARS

Here the arrangement is unusual. The double track on the load side extends but a few feet from the cage landing. Loads are weighed by an automatic self-recording scale. Cars are turned alternately to either cage by means of self-acting switch, the method of operation of which can be noted in the illustration.

At the slope bottom an emergency station of unusual construction is located. This houses a fire-fighting apparatus mounted upon a car truck, also a motor ambulance. The interior of the station, which is a clean-cut cement-plastered whitewashed and well-lighted room, contains nothing but the two emergency outfits together with the tracks upon which they stand. This barren but extremely orderly arrangement facilitates the quick departure of either or both of the two emergency machines in case of accident.

The company has one motor ambulance at each of its three mines. All three were built by the machinists and blacksmiths at the respective operations during spare time, or, rather, that not otherwise occupied. Each is built on the chassis of a small-tonnage locomotive. The body is constructed of light steel plate, cut to size, bent and riveted in the machine shop.

Such an ambulance is a highly efficient means of removing injured men to the surface with a dispatch not possible with the means commonly employed. The discoverer of an injured man hastens to the nearest telephone and calls the motor barn, which is adjacent to the emergency station. A crew to man the ambulance is always available during working hours, as the company employs a large number of men certified in mine rescue and first aid.



A CONCRETE OVERCAST WITH AN EXPLOSION DOOR

This door serves also as a means of communication with the cross-entries. Some place has to be found through which to pass from the intake to the return, and the door provides for this and as a relief valve in case of an explosion.

The ambulance is rushed to the scene of the accident, the proposed route of travel being cleared of traffic by telephone. The crew on reaching the injured man is able to administer first-aid treatment to the patient, as the supply of material for this purpose in the ambulance is complete. The injured man is then placed on a stretcher, lifted to the ambulance, and rushed to the surface.

At the Pittsburgh (Pa.) experiment station of the U. S. Bureau of Mines, tests have been made in a small gallery to obtain comparative data as to the sensitiveness of methane and gasoline for the contemplated research as to the safety of motors in gasoline vapors. Permissible equipment, which has been tested by the Bureau of Mines and more carefully inspected by the manufacturer, rather than "flame-proof" equipment, should be required in all gaseous mines or gaseous sections of mines, and the use of any other should be discouraged.

Give Each Mechanical Loader Its Locomotive and Spend A Trifle on Haulage to Save Much on Mining Cost

Prepare Section of Mine for Exclusive Use of Shovel—Provide Parting for One Car or More, Sixty Feet or Less Behind Shovel—Mechanical Loaders Will Lower Almost All Costs, Even Main Haulage

By W. R. Calverley*
Pittsburgh, Pa.

FOR many years attempts have been made to devise a machine to load coal in the mines, thus effecting a saving in manual labor. It is noticeable, too, upon careful investigation, that most of the machines with which we have been experimenting have been the handiwork of men who were not mining men in any sense of the word, and this is largely the reason why the machines do not meet the expectation of their designers, for difficulties have to be overcome in putting these machines into operation for which men unfamiliar with mining conditions cannot possibly provide.

It would seem logical for anyone who is seeking to develop a machine to have the advice of, and to act upon the suggestions offered by, men who are thoroughly familiar with mining and who at the same time are interested in the development of a machine having possibilities of becoming a commercial success. There is a field for such machines, and I feel confident that ultimately we shall have a loader that will yield the desired results.

In the first place, we must set before us the problem of removing the loaded cars from the machine with the least delay possible and find a way to keep the machine as nearly as may be in continuous operation. I have seen several machines that would load a car up very quickly, but so many minutes would elapse in getting the loaded car away and the empty one in its place that the advantage was largely or even wholly lost.

Hitherto this has been the serious drawback to machine loading, and it must be eliminated before we can say that we have made any real progress in making the mechanical loader a success. Unless we can load a sufficient tonnage to meet all labor charges properly charged against the machine, in addition to other liberal allowances for upkeep, maintenance and interest on the investment, we cannot expect a loading machine to appeal to the industry generally.

To bring this about mining men must be prepared to help the designer of the machine to overcome the difficulties which have been responsible for the little progress so far made. When one introduces a mechanical loader into the coal mine, a section must have been prepared for it if we would expect to get the best results. By this I mean that a particular section should be prepared so that it can be worked entirely by coal-cutting machines and a mechanical loader, a group of places being provided—the number to be determined, of course, after a practical test has been made.

One cannot expect to work a mechanical loader successfully unless a locomotive is kept in attendance on this machine exclusively and unless the entry be kept entirely free from locomotives other than the one allotted to the loader.

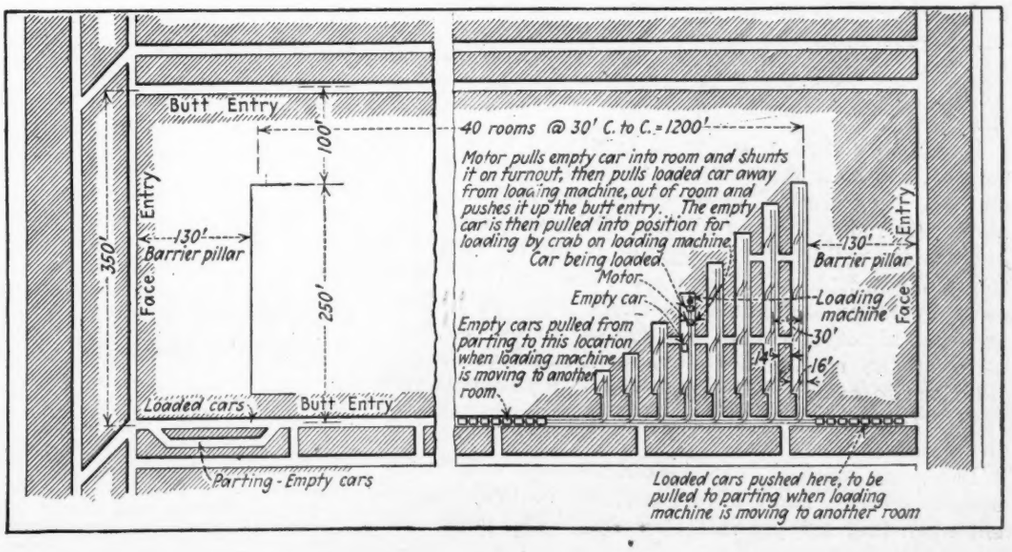
One of the first things to remember will be that the locomotive must take a sufficient number of cars into the entry to clean up a working face so that when the last car is loaded they can be taken away, leaving the tracks clear for the loading machines to move quickly and uninterruptedly to the point where coal next will be loaded.

Passing tracks must be provided as near to the machine as economically possible, so that there will be the least possible delay in the changing of cars. After the car is removed an empty must be placed quickly in its place, so that the machine will be kept busy. This, in my judgment, can be accomplished by adopting

*President, Fayette Coal Corporation.

Plan of Loading Machine Workings

The locomotive places the empties one by one in the nearby room turnout and hauls away the loads, also one by one, but a crab on the loading machine is relied upon to place the empty cars for loading. While the loader is moving from room to room the locomotive pulls out a string of loads to the parting and brings in a train of empties.


Butt Entry
100'
40 rooms @ 30' C. to C. = 1200'
Motor pulls empty car into room and shunts it on turnout, then pulls loaded car away from loading machine, out of room and pushes it up the butt entry. The empty car is then pulled into position for loading by crab on loading machine.
Car being loaded
Motor
Empty car
Empty cars pulled from parting to this location when loading machine is moving to another room.
Loading machine
30'
14'
16'
130'
Barrier pillar
Face Entry
350'
250'
Loaded cars
Butt Entry
Parting - Empty cars
Loaded cars pushed here, to be pulled to parting when loading machine is moving to another room

a method which is illustrated in the accompanying figure. It should appeal to everyone as being simple and yet one that takes us a long way nearer to the accomplishment of expeditious mining.

It is difficult to prepare a drawing which will show fully the many all-important factors by means of which the best results are obtained from the mechanical loader. Consequently, it is necessary to leave something to the imagination. My plan is to work the coal out in blocks or panels which in my judgment should be about 1,500 ft. long. I propose to turn off working places at the extreme end of the panel and to work the block on retreat.

About eight working places should be ample because, if the machine is what one has a right to expect, it could, after cleaning them all up, start to load up a succeeding cut in the same group of places. The rooms should be worked in regular rotation, so that when the working faces have been driven up the full distance the pillars can be extracted. In all probability it would be found advantageous to install a small hoist to handle the cars between the working faces and to the entry. It is important to keep a locomotive constantly in attendance upon the loading machine.

When the coal in the working place is loaded, the motor then would go on to the foot of the entry, where a passing siding has been provided. It would there discharge its load and start back up the entry with a train of empties. Thus the motor would have something to do while the loading machine was moving from one place to another.

It will then be noted that in the plan I have prepared a back switch is located in the working place just as near to the entry as it can be located. This should be long enough to hold one car. This switch, or parting, should be advanced with every 50 or 60 ft. advance in the room face. A contrivance would have to be put on the loading machine, so that it could pull the empty car under the conveyor of the shovel with the least possible inconvenience and delay.

Coal Should Be Sheared Before Blasting

In studying the question of mechanical loading I have been influenced largely by what I know of the Oldroyd undercutting and shearing machine. I feel confident that the coal should be sheared before shooting, for by this provision tight shots are eliminated and fully half the explosive that would be otherwise used in room and entry work is saved. At least one hole is dispensed with, reducing by this much the work of the shotfirer, who also is saved the time ordinarily expended in waiting for smoke and gases from the explosive to clear away.

Loaders will find it easier to commence work when the coal has been sheared than they do where a buster shot has been used. The danger of blown-out shots is materially reduced, the coal will not be shot to pieces, less damage will be done to the pillars and the roof, and the mine atmosphere will be clearer and healthier. Excessively large and numerous shots often so becloud the mine atmosphere that it is difficult to see the character of the roof, and the gases formed are surely injurious to health. For these and other reasons just recited I feel justified in attaching much importance to the shearing of the coal.

If loading machines can approach closely what their designers claim, many advantages will be made apparent when they are put into operation. The mines will be able to produce their present tonnage without being as extensive as they are now, dependent as they are today on manual labor for the loading of the coal. It is well known that the areas in which coal is being produced should be kept as small as possible. By such concentration less track need be maintained, fewer roadways have to be kept clean, and fewer timbers will keep the workings in a safe condition. By providing the workmen with mechanical means of loading they also surely are benefited, for thereby their otherwise laborious toil becomes reduced to an easy job with little else to do than to watch the machines performing their work.

The mechanical loader permits of: 1. Uniform and systematic advance. (a) Inequalities in the time and efforts of miners are overcome. With present methods a hard worker may have a place adjoining several slackers—the result is apparent. (b) Work may be concentrated on one or more places which it may be urgently necessary to speed up.

2. Simplification of main haulage, ventilation, pumping, etc.

3. In a new development rapid increase in daily production and the attainment of ultimate output in a comparatively short time. (a) Higher recovery is possible because of quicker working. Loading machines should be, and in all probability will be, worked in two 8-hour shifts. The first, or day, shift, of course, will work at capacity. The second, or night, shift would limit its output to the supplying of enough coal at the gathering points or on the tipple to insure such work for coal-handling equipment and the men in charge that no time will be lost at the beginning of the day shift while the first load trip is being made up.

Let me emphasize the need for making sure that the surface plant is of sufficient capacity for needs, present and prospective. It is better to have a few of the men who handle the coal idle part of the time than to have perhaps hundreds of miners waiting for cars or the clearing up of a congestion in traffic. This last is one of the important details in the laying out of the future mine where mechanical loading will be introduced.

How to Prevent Coal-Pile Fires*

By J. E. Williams†
Waterbury, Conn.

THE secret of preventing coal piles from catching fire by spontaneous combustion lies in the manner of building up the piles. Two simple rules that, if followed, will go a long way to prevent fires are: (1) In unloading coal with buckets drop the load in a bulk.

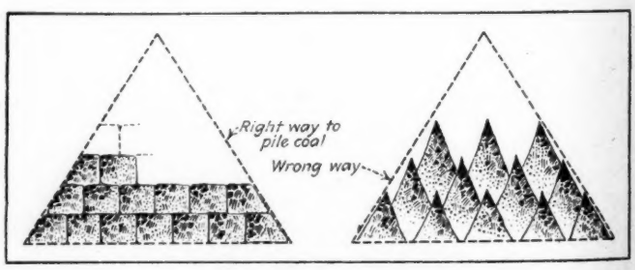


FIG. 1—METHOD OF STORING COAL

Right—Coal piled in shape of cones separates the fine and coarse. Left—When piled in layers the mixture is kept together, preventing air filtering through.

*Electrical World, June 3, 1922.
†Chief engineer, The Chase Companies.

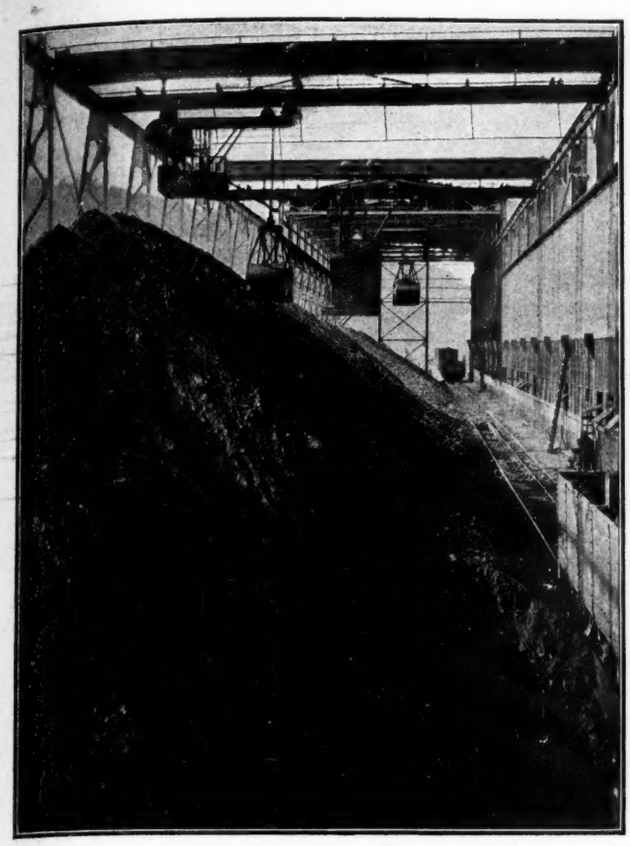


FIG. 2. STORAGE PIT CONTAINING 7,000 TONS

This pile is 500 ft. long by 60 ft. wide. Though in the general form of a cone, it has been made up by a series of dumpings, the bucket being so placed and opened in each case that the coal falls in a mass and does not dribble out into a small single-bucket cone. In another pile near this 10,000 tons is stored.

Don't let it trickle out into cone form. (2) Build the pile in flat layers.

In building up the layers of coal proceed as if building a brick wall. Drop the first load flat in a bulk, lay the next load close to the sides of it, the next to the side of that, and so on until one layer is completed with a flat top. This keeps the mixture of fine and coarse coal together.

If the coal is dropped from the bucket in cone shape, the heavier coal rolls down the sides of the pile, leaving the fine coal in the peak. The cones that are formed will have the heavy coal at the bottom and sides, through which air will enter and may set the whole pile on fire. By building the coal pile in layers this separating of the fine coal and of the larger pieces of coal is prevented, and the air will not filter through so easily. The right and the wrong ways of coal piling are shown in Fig. 1, where on the left, the coal is dumped quickly, thus preventing it from separating with the large coal at the bottom and the fine coal at the top. On the right is shown the formation of internal cones produced by improper piling.

Some coal will catch fire no matter what precautions are taken. This indicates excessive sulphur and iron. I have seen a ray of sun through the roof ignite this kind of coal, but fortunately there is very little of it on the market.

Once the coal pile is built for storage, rehandle the coal as little as possible. For use take a layer off the top and build up as before, not forgetting that the secret lies in keeping the surface flat and avoiding internal cones.

Chart That Solves Pipe-Capacity Problems

By W. F. Schaphorst
Newark, N. J.

ENGINEERS often desire to ascertain quickly the velocity with which water will travel through a pipe of given diameter. They often want also to know the number of cubic feet of liquid or gas that will flow through it in one minute, the number of gallons of liquid which will pass through it in a like time or the number of pounds of water it may be expected to convey.

All these quantities are dependent, of course, upon the size of the pipe, and as the sizes in common use vary, standard pipe not being exact in internal diameter and extra heavy pipe differing also, it usually is necessary to search through tables and make lengthy calculations before arriving at a satisfactory result. And then, after a result has been obtained, one can never be certain that it is correct.

The accompanying chart solves all of these matters in a simple manner. The best way to explain the use of this chart is to solve a problem by its aid. First, it will be observed that three sets of figures are given in connection with the left-hand column, which I have called column A. The first set, marked "No. 1, Standard," gives the actual internal diameters of standard pipe. This shows, for example, that the internal diameter of a 1-in. standard pipe is somewhat greater than 1 in. The set of figures marked "No. 2, Exact," gives exact internal diameters. Thus, if we have a pipe the internal diameter of which is exactly 2 in. as used in the problem to be cited below, we use this column of figures. The right-hand set of figures, marked "No. 3, Extra Heavy," gives the actual internal diameters of extra heavy pipe. It shows that the inside diameter of a 1-in. extra-heavy pipe is less than 1 in.

Problem of Capacity of Two-Inch Pipe

Now, for the example: How much water is passing through a pipe the internal diameter of which is exactly 2 in., the velocity being 2 ft. per second?

Locate the line corresponding to a 2-in. diameter in column *A* over the word "exact" and, from its point of intersection with the vertical, project a straight line through the 2-ft. per second point in column *C*, as shown by the dotted line. This intersects column *B*. From this point of intersection with column *B* run a straight line horizontally across the chart to the corresponding point of column *G*, also as shown by a dotted line. The intersection of this horizontal line extended from column *B* to column *G* gives simultaneously the desired result in three columns—namely, *D*, *E* and *F*. It shows that approximately 2.6 cu.ft. per minute is flowing through the pipe (the exact amount is 2.615 cu.ft.). It also shows that somewhat more than 19 gallons per minute is passing through the pipe (the exact amount is 19.58 gallons) and that the pipe is carrying about 165 lb. of water per minute (the exact amount being 163 lb.).

This chart is fairly accurate, certainly sufficiently so for all practical purposes. It is evident upon studying it that if the pipe were a 2-in. standard pipe, instead of being exactly 2 in. in internal diameter, the horizontal line from column *B* to column *G* would be slightly lower and the three quantities would be slightly greater.

On the other hand, it is evident also that if a 2-in.

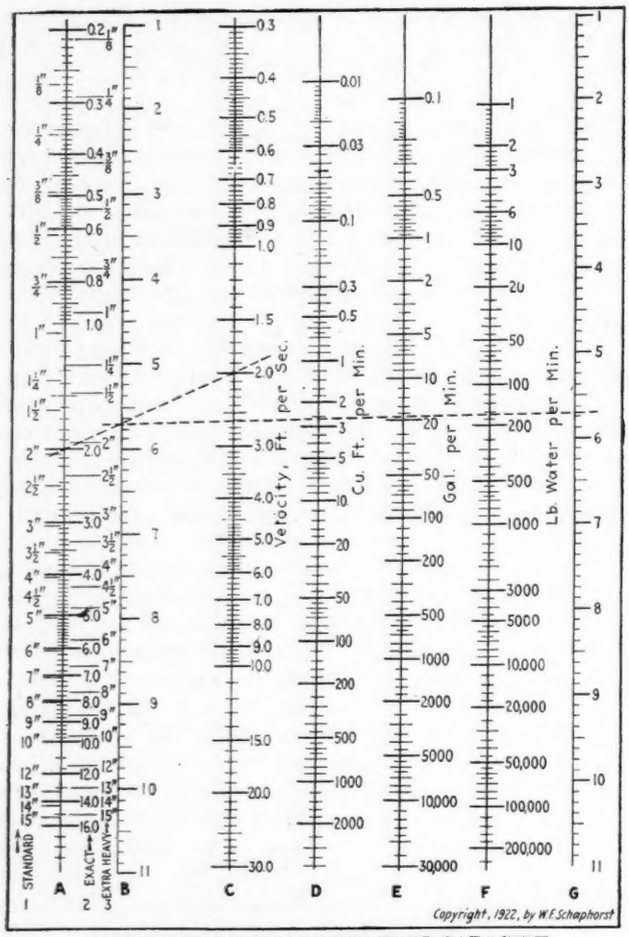


CHART FOR DETERMINING PIPE CAPACITY

The dotted lines show the method of solving the problem of the capacity of a pipe of exactly 2 in. internal diameter with water running at 2 ft. per second. One line joins 2 in. in line *A* with 2 ft. in line *C* intersecting line *B* at a point from which a line is drawn to a similar figure in line *G*. This line crossing lines *D*, *E* and *F* shows on their scales respectively the number of cubic feet, the gallons and the tons passing per minute.

extra-heavy pipe were used instead of the 2-in. exact, the horizontal line from column *B* to column *G* would be raised slightly above its present position and the three quantities would therefore be somewhat less.

Inversely, if any quantity in column *D*, *E* or *F* is known and it is desired to determine the velocity per second flowing through the pipe, this same chart can be used for this purpose with equal ease. First run a horizontal line from column *B* to column *G* through the known point and then from its intersection with column *B* project a straight line to the known pipe diameter. The intersection of this latter line with column *C* gives the velocity of flow in feet per second.

On the other hand, if one wishes to select a pipe size, knowing any one of the quantities in column *D*, *E* or *F* and having decided upon the velocity of flow, the procedure to be followed is quite evident. It will be noted also that this chart can be conveniently used for conversion. For example, how many gallons are there in 2.6 cu.ft.? The dotted horizontal line already drawn shows that the number sought is slightly over 19, which is equivalent also to about 165 lb. of water. This chart gives a visual illustration of the relationship existing between pipe sizes—standard, exact and extra-heavy. By using this chart one can quickly "read off" the actual internal diameter of a standard or extra-heavy pipe.

In range this chart has been made sufficient to cover almost any problem dealing with water. The standard pipe sizes included vary from ⅛ in. to 15 in. and the velocities from 0.3 to 20 ft. per second.

Should anyone prefer to use formulæ rather than this chart, either for solving a problem directly or for checking the result taken from it, the following are the formulæ on which it is based:

$$Q = 2.45\ d^2v$$

where Q = gallons per minute flowing;
d = internal diameter of pipe in inches;
and v = velocity of flow in feet per second.
The cubic feet per minute = $0.327d^2v$ and the pounds of water per minute = $20.4d^2v$.

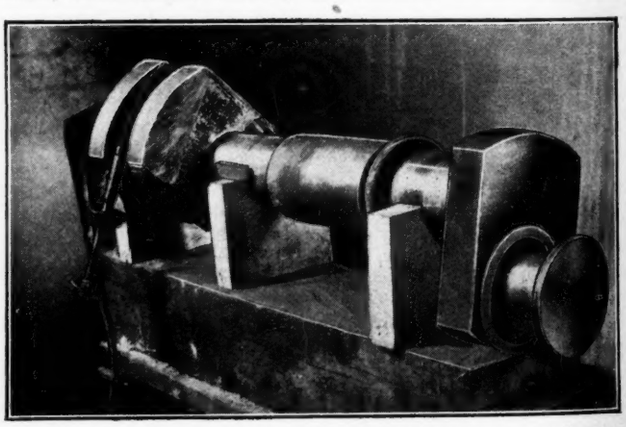
Welding Job Saves Union Pacific Coal Co. Nearly a Thousand Dollars

IN THE accompanying illustration is shown the 5-in. crankshaft of a mine pump belonging to the Union Pacific Coal Co. and installed in one of the mines at Cumberland, Wyo. This shaft broke clear across at the point indicated. The pump was accordingly dismantled and the shaft lined up and clamped securely in a supporting frame as shown. Here the break was repaired with an electric welding set. Since being returned to operation it has given excellent service.

This repair cost about $50. It is estimated that had the welding outfit not been available and had it been necessary to procure a new shaft, the total expense would have amounted to nearly if not quite $1,000. Furthermore, by welding, the pump was back in service in a short time, whereas a long delay otherwise might have been entailed.

This firm welds electrically all broken car irons and coupling links, renews the ends of boiler tubes, repairs broken shafts, and performs numerous other miscellaneous jobs by the same means. The officials are sometimes inclined to wonder how they got along without the electric welder.

At first considerable trouble was experienced in procuring competent operatives to use the outfit. Three or four itinerant welders "happened along" and were given employment, but proved to be tyros and would-bes rather than sure-enough welders. It was decided, therefore, to break in some of the regular employees and encourage them to perfect themselves in the manipulation of the apparatus. This, therefore, was done, with results entirely satisfactory to all concerned.



BROKEN CRANKSHAFT ELECTRICALLY WELDED IN UNION PACIFIC COAL CO.'S SHOP

This weld was made by some of the regular employees of the Union Pacific Coal Co., who have been taught the art of electrical welding and so can save the coal company from calling in outside help.

Stripping Coal in Russia at Fifty Degrees Below Zero

Engineer of "Great Bear" Country Describes Difficulties of Loosening Overburden and of Loading and Dumping It—Both Steam Shovels and Men Had to be Protected Against Cold and Wind

AMERICAN engineers would hesitate to strip coal at a time when winter gales such as blow in Russia sweep over the ground, for the mercury frequently hovers around 50 deg. below zero, freezing everything to adamant. But in parts of Russia the need for fuel requires that the attempt be made, so in spite of obstacles, steam shovels and draglines, winter and summer alike, are digging coal in the Ural region. The difficulties of the task and how they were overcome were described in *Gornoji Djilo,* the journal of the Mining Board of the Supreme Council of Public Economy, by Saitzevsky and translated by George A. Moskchansky, an engineer. The translation runs thus:

For a long time the excavating work in northern Russia began in April or May, according to the location and readiness of the ground to thaw out, and lasted until November, and sometimes only until October. Thus the work was prosecuted from five to seven months, or an average of about half a year. The rest of the year excavators were not in use, though in southern Russia they work the whole year long.

During the present period of national reconstruction the demand for excavators continually grew and as it has been impossible to obtain these machines abroad for the last three years and as they are not built in Russia, it seemed absolutely necessary to utilize the machines on hand to the utmost, making them work not merely half time but throughout the year. Many experts in coal mining questioned whether winter work was practicable, especially in the northern parts of Russia.

Michigan Mines Strip Ore in Winter Months

In foreign technical literature there are descriptions of the stripping of coal or ore by excavators during the winter. Thus, in the March, 1918, issue of the *Engineering and Mining Journal* an article describes in detail how ore is stripped every winter near Lake Michigan so that it may be loaded early in the spring, ready for shipment to the plants as soon as navigation opens.

It was known also that during the building of the Murman R. R. excavation continued during the winter, the military necessity requiring that the work be speeded as much as possible. This work was performed in an extremely severe winter, not differing much from the climate of the Urals, with temperatures of —58 deg. F. This suggested to me that the excavating work in Cheljabinsk coal mines could be extended through the winter months. This project has been accomplished and in the strip pits of this northern country, three steam shovels of American manufacture have been successfully used. The ground consists of a sandy clay. The depth of the cut where the Bucyrus works is about 12 ft., the shovel standing on the coal and loading the overburden into cars standing on track laid on the surface—that is, at a height of about 34 ft.

The shovel moves from north to south along the eastern side of the cut and the two Marions move from south to north along the western side while going deeper by steps or banks on an inclination of 1 per cent. The material is lifted only a few feet, the booms of the shovels being short.

In December, 1920, the Bucyrus worked steadily by day and by night, loading from 800 to 1,000 long tons in 24 hours and uncovering between 700 and 750 gross tons of coal. The Marions for a while performed a preparatory work, gradually going deeper in four cuts, each 4.8 ft. deep, and having behind them the pit about 19½ ft. deep. One of them is now almost at the beginning of the cut, another one in the middle digging a low bank, consequently their work is not efficient, but after reaching the depth of 16 to 19½ ft. they will scoop a full dipper load at each movement, whereas they now fill the dipper only by making many strokes. With banks of the regular height they will move in 24 hours not less than 1,635 cu.yd.

Draglines Also Working in Russian Winter

Beside the excavators just mentioned a Bucyrus No. 14 dragline excavator is working in the southern cut of the Cheljabinsk mine. Beginning its work without a preparatory blasting of the frozen surface the bucket of the excavator broke, temporarily suspending the operation of the machine. It must not be thought that work cannot be done with this machine during winter months, for it can be successfully operated if the frozen top crust is first thoroughly prepared by blasting. To prevent the cut from freezing, the work must be continuous.

Winter work is not insuperably more difficult than work in the summer. If it is prosecuted in three shifts the ground is not given time to freeze up, and the machine has difficulty only in removing the top crust. To facilitate its digging the crust is prepared by blasting a number of holes drilled in checker order 2 ft. 4 in. from each other and 27 to 35 in. deep. The holes are charged with soft dynamite, each charge being 0.112 lb. They are drilled at an angle of 45 deg. to the surface, with the slope toward the bank.

Bucket Readily Scoops Up Frozen Lumps

After the holes are exploded the frozen crust is cracked in all directions, and the dipper of the excavator without much difficulty scoops the upper part of the bank, which readily breaks into lumps.

Preparations are being made to drill the blast holes with air drills. When the work is done by hand a workman in one shift with the twist drill will drill ten holes. It seems difficult to explain how so much work can be done until it is stated that the upper layer consists of soft black soil. Where, as in some places, the top consists of clay, air hammers have to be used.

When the ground is thus prepared for excavation the work is made relatively easy, so that the resistance of the ground to the shovel is little more in winter than in summer. The main difficulty is to protect the intake and exhaust steam pipes from freezing, to supply the

machines with water, and to protect the workmen from cold and wind.

In Cheljabinsk mines, on account of certain misunderstandings and friction, the winter work in 1920 was started almost without preparation, the precious months of the autumn being allowed to pass by without anything being done. Operations were begun in the latter part of November, when cold, windy weather came on, the temperature falling to —50.6. At the start the steam in the pipes condensed rapidly, and the pipes, cylinder heads and valve chests froze up almost instantaneously whenever work stopped. The pipes, cylinders and other parts of the machine where water was likely to gather, had to be covered with insulation. The machine was covered with a wood shed, but this proved an unsatisfactory protection.

To supply water for the shovels was an unusually difficult task. As in coal mines the water is very hard, it usually was delivered in sheet-iron tanks, but in winter these proved to be useless, for the valves froze up when the water was shut off. The Omsk R. R. furnished the excavators with fourteen box cars each containing two water tanks of an aggregate capacity of 2,650 gal. These box cars are heated by stoves. The discharge valves are inside the cars and consequently do not freeze. Thus protected the tanks give satisfaction. The feed water for the boilers is brought in these tanks fourteen miles from a point on the Omsk R. R.

For these cars a separate track is laid alongside that provided for the equipment on which excavated material is loaded. Water is delivered to the excavator tanks through a 2½-in. hose.

Shovel Lost Much Time Waiting for Cars

Success in excavating work depends largely upon the track facilities and the prompt arrival of cars. The efficiency of the excavators during the last working season was from 15 to 40 per cent of normal and the latter figure was reached only lately. This lack of efficiency can be laid almost exclusively to the unsatisfactory condition of the service tracks. The machines were frequently idle, sometimes as much as 75 per cent of the working time being lost waiting for the locomotive and cars, which were delayed by reason of derailment of loads and from other causes.

The Omsk R. R. is greatly interested in the production of this coal, being itself the chief consumer of the product. Consequently it took the shipping part of the business in its own hands, placing in each department responsible agents appointed by the department manager of this division of the line. As soon as this was done the machines were enabled to keep busy, the tracks and cars being kept in good order and locomotives arriving at stripping machines as they were needed. This also aided the winter work materially. Had it not been that the Omsk R. R. took over the hauling of the trains and the supply of water, the removal of snowdrifts, the thawing of the tanks, and other haulage and water-tank equipment difficulties, winter work would have been impossible.

In order to avoid the freezing up of the banks the shovels were kept as far as possible in steady operation, stops being made for only short periods when it became necessary to make repairs, replace broken parts and do other necessary work. To this end the pit was operated for three shifts despite the fact that less is done at night than can be done during the day.

Care should be taken to light the pit and dumping place adequately. Incandescent electrical lamps are not altogether convenient for this purpose. When they are placed on the machine itself they are subject to much vibration and burn quickly. It is therefore more convenient to erect posts behind the machine and mount them on these.

It was found important to provide the excavator gang with clothing of unusual warmth. It was not sufficient to provide them solely with the usual fur coats and felt boots. Cotton underlined trousers and coats and the felt caps of the new Red Army style were provided. This headgear protected the back of the head, the ears and even the cheeks.

Cannot Work Full Eight Hours in Cold

This type of equipment though light, is warm and does not hinder the free movement of the men in the excavator gang. Yet even in garments such as this it was impossible to work continuously for eight hours in the cold and wind, and the gang, consisting of an engineer, a trackman, an oiler and a fireman, had to be reinforced by a second engineer and trackman, their work being the most responsible and requiring special activity. It is also the most uncongenial work, for the trackman is not protected in any way from the wind and cold. Consequently it is essential that during the shift he have an opportunity to warm up at the boiler of the excavator shed.

Snow fences must be erected to prevent the accumulation of drifts. At the beginning of the work the trench filled with snow, the dipper scooped up snow with the ground and this formed with the clay a sticky mass, which adhered to the dipper so that it could not be discharged. Consequently the work had frequently to be stopped while the dipper was cleaned by hand.

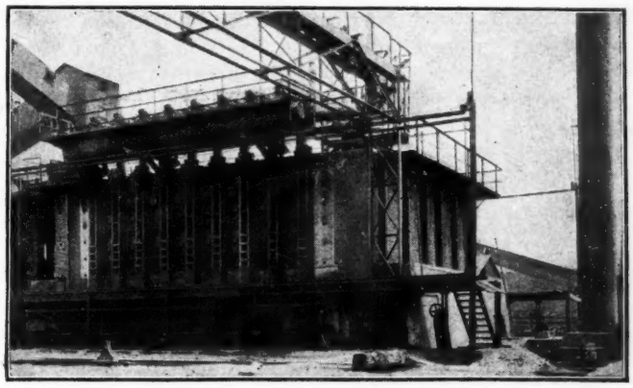
The unloading of cars at the dumping place also was a difficult operation. The cars were loaded in from 25 to 30 minutes and the dumping took about an hour Each flat car required about five or six workmen to unload it, and on the twelve flat cars of a single train about fifty or sixty men were employed. These workmen throughout the shift ride between the cut and dumps, the distance being about 1.8 miles. They are exposed constantly to the cold and wind, as the dumps are located where the ground is level and unprotected and where consequently the wind has a clear sweep.

Dump cars have as yet not been provided, but they are under construction and probably soon will be in operation. If not, then the unloading should be done by a plow. Thus unloaded the work could be done in not more than five minutes instead of, as at present, in an hour. This will reduce considerably the number of work trains and decrease to a large extent the number of men performing this exacting work in the bitter cold.

Coal mining companies are rapidly substituting permissible explosives for other classes of high explosives and for black blasting powder, according to the U. S. Bureau of Mines. By so doing they are rendering valuable aid to the nation-wide effort to make mining a safer occupation for the 750,000 men employed in American coal mines. In 1912, just ten years ago, only 8 per cent of the explosives used at coal mines was of the permissible class; in 1921 the percentage had increased to 18; and in March, 1922, it was 21. The steadily increasing rate of use of permissible explosives is shown by the following tables of percentages: 1912, 8.03; 1913, 9.44; 1914, 8.88; 1915, 10.32; 1916, 11.84; 1917, 11.08; 1918, 13.08; 1919, 15.21; 1920, 14.96; 1921, 17.90; March, 1922, 20.80.

Piette Coke Oven Consumes a Little Over One-Third of the Heat in Its Gases

By Hector Prud'homme*
New York City



Makes Almost Seventy Per Cent of Coal into Coke, About Five and One-Half Pounds of Ammonia, Seven Gallons of Tar and Three and One-Half Gallons of Benzine—Long Oven Life Anticipated

THE Piette type of coke oven was built experimentally for the first time in the United States by the Franco-Belgian Coke Oven Corporation of Brussels, Belgium, at the Carondelet coke-oven station of the Laclede Gas Light Co., St. Louis, Mo. This construction of eight ovens was made for the purpose of a demonstration preliminary to the organization by the Franco-Belgian Coke Oven Corporation of the Belgian American Coke Ovens Corporation. Minute tests have been conducted on these ovens by the Laclede Gas Light Co. during 30 consecutive days and the ovens have been in regular operation for over 14 months. The Franco-Belgian Coke Oven Corporation has more than 1,500 modern ovens in commercial operation in several countries in Europe. However, the construction in St. Louis, was experimental and, therefore, limited to eight ovens.

The Piette oven is of the horizontal type, with vertical flues, transverse regenerators and reversing arrangement. The regenerator chambers run the whole length of the battery at right angles to the heating walls and oven chambers. This intercrossing of the walls is designed to give a maximum of stability to the whole structure. Arrangements are provided for expansion when the ovens are heated, so that no fractures will occur to interfere with the proper working of the ovens.

Although arranged in longitudinal chambers, the regenerators are actually of the transverse type, and the products of combustion cross through the checkerwork in a direction parallel to the center line of the oven and travel longitudinally only after arriving in the free space of the secondary chamber. The total resistance is thus lowered to 0.2 or 0.23 in. of water-gage, instead of the 1.2 in. usual in longitudinal regenerators. In this way the pressures in the oven chambers and heating flues are more nearly equalized, and a maximum of gas-tightness and a maximum recovery of by-products is assured.

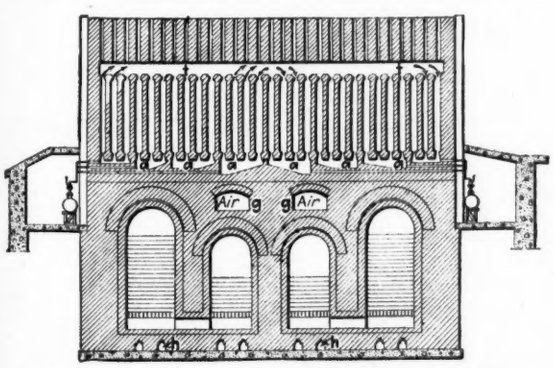


FIG. 1. SECTION THROUGH HEATING FLUES

The regenerators run longitudinally but the gases do not travel in that direction but at right angles to it because the resistance of a long regenerator is considerable and one that is shorter will do the work satisfactorily. The longitudinal chamber is structually stronger.

While not essential, the use of a fan for the air supply will tend more nearly to equalize the pressures between the oven chamber and the heating wall, and prevent the passage of gases in either direction as the ovens become older.

Regulation of Gas and Air to Heating Flues

The center-line of the battery divides the heating wall into two symmetrical parts, reversals being made from one half to the other. The space between the sole flues of each half is divided into four chambers *a* (Fig. 1), each fed by an individual gas supply pipe provided with its regulating cock and distributing the gas to four vertical flues. Independent of these cocks, there is also a control cock common to each half-wall. The air for each half is regulated by a damper *r* (Fig. 2), at the inlet to the sole flue *s* (Fig. 2) of the oven adjoining. The area of the air nozzle for each burner is determined with great care.

This oven may also be constructed, if desired, by arranging the reversal from one group of two or three flues to the next group of two or three, by slightly modifying the method of coupling the vertical flues with the sole flues, and using suitable reversing cocks.

The air for combustion is drawn through flues *g* (Figs. 1 and 2) to absorb the heat radiated downward from the sole flue, as well as through air ducts *h*, to take up the heat radiated downward from the regenerators. Thus preheated, the air arrives at the reversing valve and is there directed alternately into one or another of the secondary regenerators.

The several means of control, to which there is easy access, enable great regularity of heating to be obtained, at a high, even temperature. The reversal of the draft and the operating of the burner valves are carried out by the working of a single lever.

To make the operation of the oven easy and certain, sight-holes for the examination of every part are pro-

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vided, one for each vertical heating flue on top of the ovens, one in each half of the sole flue *s;* one in each horizontal flue *t* (Fig. 1) in the heating wall; one in each regenerator chamber. Those who are superintending and controlling the ovens have thus every facility for the even heating of the battery at any speed.

The dimensions of the eight ovens installed at St. Louis are as follows:

Height of oven chamber	9 ft. 10⅝ in.
Length between doors	37 ft.
Average width	19¾ in.

A 30-day test was begun after the ovens had been operated for 3 months. The figures in Table I show in more detail the results obtained.

The mixture of coal charged in these ovens during the 30 days of tests was as follows: 65 per cent of high volatile coal (Elkhorn from the Consolidation Coal Co.) and 35 per cent of low volatile coal (Pocahontas from the Cleveland-Western Coal Co. of West Virginia). The average analysis of this mixture was:

	Per Cent
Moisture	4.43
Volatile	29.06
Fixed carbon	61.37
Ash	5.14
	100.00

Tests of the coke yield and researches as to its nature were made by weighing daily the load of one oven,

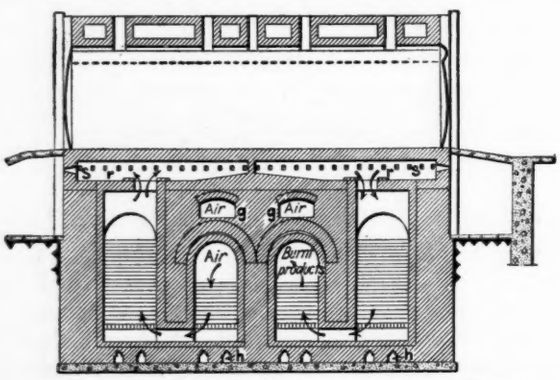

FIG. 2. SECTION THROUGH OVEN CHAMBER

This illustration shows the course of the gases from the sole flue through a regulator into the two regenerator chambers and the course of fresh air through two regenerators and a regulator into the far half of the sole flue. The movement is parallel to the center line of the oven and not longitudinally, but the longitudinal flue is favored because the long wall holds the oven together.

which was then screened and the samples submitted to laboratory tests. The results are given in Table I. The screening was done on an inclined 2½-in. roller grizzly screen.

These figures show that the yield in available B.t.u. would be, after deducting the B.t.u. needed for heating the ovens, 60.9 per cent of the total quantity of B.t.u. produced. This already very satisfactory proportion does not, however, represent the real power of this system of ovens.

A small number of ovens can, of course, not give the same yields as a bigger battery, of say fifty or sixty or more ovens of the same type. In the case of a big battery the gas used for the heating of an end-wall, which was found to be more than half the amount used on one oven wall for intermediate flues, is distributed over a larger number of ovens and as a matter of course over a larger quantity of the coal distilled. If the heat used in one end-wall is distributed over a battery of fifty to sixty ovens, the average number in a modern battery, the reduction in B.t.u. consumed in comparison with a battery of eight ovens is about 6 per cent. Taking this into account, the calorific balance sheet of the Piette ovens working under the conditions described above at St. Louis is as follows:

	Per Cent
B.t.u. produced, 3,301.7 per lb. of coal	100
B.t.u. in the surplus gas, 2,088.4	63.25
B.t.u. consumed in the heating gas, 1,213.3	36.75

This consumption is claimed to be the smallest yet realized in the United States considering the conditions imposed by the tests.

TABLE I—RESULTS OF TESTS

A.	Ovens and coal:		
	Number of ovens charged and pushed		282
	Average coking time		20 hr. 18 min.
	Average load per oven		26,770 lb.
	Total quantity of coal charged in 30 days		7,549,400 lb.
	Average quantity of coal charged in 24 hr. per oven		31,455 lb.
	Average temperature of the smoke at the outlet of the heat regenerators corresponding to 3.8 per cent oxygen or an excess of 25 per cent of air		624 deg. F.
B.	Coke:		
	Total yield of dry coke calculated on coal as charged, per cent		69.19
	Proportion of foundry coke in total coke		38.15
	Proportion of other grades of coke		61.85
	Average analysis of the total coke obtained, per cent:		
	Moisture	1.94	
	Ash	6.77	
	Fixed carbon	90.33	
	Volatile matter	0.96	
	Specific gravity:		
	Apparent	0.973	
	Real	1.906	
	Shatter test	55.57	
	Porosity:	Per Cent	
	Coke substance by volume	51.03	
	Air spaces by volume	48.97	
	Total quantity of coke produced in 24 hours in one oven, lb.		21,764
C.	Heating gas:		
	Volume of gas burnt during the 30 days in cu.ft. at 30 in. pressure and 60 deg. F.		20,332,000
	Volume of gas burnt per lb. of coal charged		2.693
	Heating value of this gas (B.t.u. per cu.ft.)		479.3
	Consumption in B.t.u. per lb. of coal charged		1,290.7
D.	Gas produced and B.t.u. available:		
	Total volume of gas produced during the 30 days at 30 in. and 60 deg. F., cu.ft.		44,159,000
	Volume of gas produced per lb. of coal charged in cu.ft.		5.849
	Average calorific value of this gas (B.t.u. per cu.ft.)		564.5
	Total quantity of B.t.u. available per lb. of coal charged (non-debenzolized gas)		3,301.7
	B.t.u. (surplus) available per lb. of coal treated		2,011.0

Average analysis of the gas produced:

	Per Cent		Per Cent
CO_2	1.7	CO	6.1
C_nH_m	3.4	CH_4	29.8
O_2	0.4	N_2	6.8
H_2	51.8		

Average specific gravity at 30 in. mercury and 60 deg. F. 0.39. Yields of byproducts per ton (2,000 lb.) of coal carbonized:

Ammonia (NH_3), lb.	5.63
Tar, dry, gal.	7.01
Benzene (product distilling below 200 deg. C.), gal.	3.42

The most important characteristics of the Piette oven are:

1. The carbonization chamber and the whole structure are perfectly tight, as was demonstrated during the St. Louis tests. This, together with a perfect regulation of the heating and the excellent heat regeneration qualities, has permitted the extraction from the coal of the maximum of byproducts.

2. Short-circuits in wall flues have been done away with through the reunion, in two continuous series, of the upward-flame and downward-flame flues. This arrangement acts favorably in the exchanges of heat with the consequence that the work of the regenerators is facilitated.

3. The distribution of the gas in each oven wall by several compartments fed by individual tuyeres, each supplying the gas to three or four flues, permits the regulation of the quantity of gas admitted at every point of the oven in such a manner that it takes into account the effects of the taper and the cooling from outside.

4. The use of fixed regulating sections for the entrance of the air under the soles and the outlet of the

burnt gases through the top of the vertical flues, which sections are calculated and confirmed by practice, makes the use of sliding bricks unnecessary. The placing of such sliding bricks is always very difficult for the heater who has charge of them, and it has been found many times that these small bricks remain stuck after some time, which fact prevents a first-class regulation of the batteries where such device is employed. The unremovable regulation sections of the Piette ovens are superior, because they need no adjustment of any kind and are not exposed to the consequences of the whim or indifference of the heaters. More uniform heating of the oven walls is obtained, as was shown under every kind of running conditions at the new battery at the Laclede Gas Light plant.

5. The fact that the longitudinal regenerators work transversely, and thus establish an automatic regulation of the temperature of the combustion air, assists materially in the equalization of the heating of the several ovens of the battery, an advantage which does not exist in the ovens having individual transverse regenerators. The uniformity of the temperature of all the ovens of the battery which was noted daily at the St. Louis plant was a feature of the tests.

6. The two transversal-conjugated-regeneration galleries on each side of the center line of the battery allow (through a convenient regulation of the sections of the communicating openings existing between the primary gallery and the secondary gallery) for compensating the effect of the drop of pressure in the outlet gallery for the combustion products and for establishing correspondingly a uniform working of the depression for all the ovens. These sections are so calculated and the quantity of checkerwork placed in the secondary gallery is such that they are perfectly sized for the products going out and in the following period for the air coming in through them.

7. The aërating galleries *g* between the soles and the secondary regenerators as well as the galleries *h* under the heat regenerators assure a convenient cooling of the combustion products and a saving of radiating heat through a reduction of this radiation. These advantages were clearly shown during the tests referred to in this article, the air being heated to 200-280 deg. F. before entering the regenerators proper.

8. The stability of the ovens is remarkable. The regenerators are longitudinal to the center line of the battery and therefore perpendicular to the center line of the oven-walls and the arches of the ovens. This intersection of the walls and the ovens makes for a maximum solidity of the mass of the battery. Then the expansion of the linings and of the arches of the regenerators, as well as of the flues connecting the primary regeneration galleries with the sub-sole flues, is rendered completely independent of the general sustaining mass of the battery. The result thereof is that the refractory material which constitutes the sole-oven walls and the ovens are built on an absolutely rigid monolithic block which cannot be deformed. Such a disposition is remarkably advantageous with the silica bricks so extensively used in the United States which expand so much. The system in which the oven walls proper of the oven are placed on regenerator walls, of which they are a part, can evidently not realize a similar tightness. The unequal temperatures which are found from the foot of the regenerator walls to the top of the oven walls justify unequal expansions from level to level, which cannot but cause cracks.

9. The ovens are easily operated and watched. As explained above, sight-holes are placed all along the passages of the flames and the gases, which are thus made accessible everywhere. The sight-holes placed at the end of the primary regenerators permit an inspection of the top of the checkerwork for the whole length of the battery. The progress of the heating is easily followed by heat coloration and general aspect of the ensemble. This inspection shows whether any oven-wall is being insufficiently heated, due, for instance, to an accidental obstruction of a cock or of a gaspipe.

Boiler Feed Pumps Most Reliable When Driven By Steam*

By C. M. Evans
St. Louis, Mo.

When steam-driven pumps are used in boiler feeding they are noted, regardless of their type, for power-plant men to consider them favorably in spite of their admitted shortcomings. Although steam-driven machines of this kind are well known to be less efficient than those either mechanically or electrically actuated, they may be operated whenever steam is on the boiler, whether any other prime mover is running or not. This characteristic is important because there are many occasions when the prime mover or generating equipment is inoperative, yet it may be highly desirable to force water into the boiler. Consequently many practical consulting and operating engineers will install only steam-driven apparatus for boiler feeding.

Where an electrically driven pump is employed its operation depends upon that of another piece of equipment—the generator. Another link thus is added to the chain of operation. If because of accident or for some other reason the generator is shut down, a motor-driven feed pump is useless.

The disadvantages of the mechanically or electrically driven feed pump, as just enumerated, vanish if a steam-actuated unit is installed as a standby. Where such an auxiliary is used—and such a one should be in every plant—the more economical motor or mechanically driven machine may be used during normal operation and the steam-actuated unit employed in emergency.

In this connection the recommendation of R. J. S. Pigott, mechanical engineer for the Interborough Rapid Transit Co., of New York, who has designed and operated some of the most important steam plants in this country and who is one of the leading men in his profession, may be of interest. He says: "Boiler-feed pumps are usually either of the duplex outside-packed plunger or the three- or four-stage centrifugal type. Occasionally motor-driven triplex pumps are installed, but their use is undesirable. The principal feature required is reliability, which at once gives the steam-driven apparatus the precedence. The duplex direct-acting type until recently was used almost exclusively, but it is now being replaced by the turbine-driven centrifugal pump."

Injectors sometimes are used as standbys for boiler feeding, particularly in small plants. They are fairly satisfactory for this service but have the disadvantage that they will not operate unless the steam pressure within the boiler is approximately that for which the injector was designed.

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Book Reviews

The Four-Hour Day in Coal

Comment By R. Dawson Hall*
New York City

WITH the intriguing title "The Four-Hour Day in Coal," Hugh Archbald introduces (the words are not mine) "a study of the relation between the engineering of the organization of work and the discontent among the workers in the coal mines." Mr. Archbald has been proclaimed as the only coal-mining engineer in the Taylor Institute. In this book he unburdens himself of a mastering obsession. For years he has grieved over the short working time of the miner and loader. He feels, as all of us feel, that the workmen should be enabled to keep busy all the time they are supposed to stay at the mine face. Alas! those who know the coal miner know well that he does not stay on the job a full eight hours when cars come fast enough that he can make a good wage in shorter time.

Mr. Archbald lays the blame for slow mine-car supply on deficient engineering. I used to think I knew what engineering was, but the term is getting today to embrace management and economics, and, looking over the book, it seems wholly to deal with these phases of engineering, which are really only side functions of the engineer and which he has only lately taken, or tried to take, under his care. Mr. Archbald himself is not clear that organization will be regarded by the reader as the engineer's function and so to guide him gently into that way of thinking he has made his subtitle read awkwardly, "the engineering of the organization of work." He takes no chances with those graceless men who would make an engineer a conjurer with materials and the forces of nature and nothing more.

Yet There Is a Real Engineering Problem

Seeing then that Mr. Archbald avers that the defective engineering of coal mines is to blame for the inefficient work of the miner one wonders why he does not discuss the problem from the standpoint of the engineer as that functionary generally is known rather than from the point of view of management and economics, which usually are regarded as separate functions—those of the manager and operator respectively. I say this because there is in this problem a distinct engineering phase which Mr. Archbald does not for one moment consider.

First, then, let it be stated that the difficulty in keeping the miner steadily employed arises from trying to run underground railroads wholly or partly on a single-track basis. Even where double tracks are on the whole used—and this is infrequent—there is in every mine with which I am acquainted some part of the workings—an important part—that operates on a single-track basis. Every car that is loaded must run up the room or, in longwall, up the gate on the same track that is used for the return journey. This prevents steady loading and is the cause of much delay. Usually the entry from which the room is driven is also single-track. Now, single-track railroading always gives an intermittent delivery of cars, especially where the loading is on the extreme end of the stub track and where cars consequently cannot be delivered in a full train to the point of loading.

Seeing that with room work and with longwall as practiced it is impossible to deliver more than one, two or at most three cars at a time to the working face it is not feasible to provide the worker at the face with more than one, two or three cars at one time. Generally only one is supplied to two men. If the car is large the loss of time may be inconsiderable, for that one car may have such a capacity that it will provide to one man facilities for a quarter day's steady loading, and should cars so large as to hold ten tons be supplied—and they soon will be introduced—they will serve the ambitious loader for about half a day.

In many mines the ten-ton car is not feasible, either because the roof will not permit such a wide space unpropped as such a car requires or because the coal is too thin to permit a car of sufficient height or for both reasons. Furthermore, a high car takes much effort per ton to fill. It is easy to see that a car that is low can be filled without raising the coal above a normal shoveling level. Every inch above that adds to the labor of loading coal, and the height soon becomes prohibitive. Loading machines and conveyors, however, may rectify that difficulty.

Problems of Railroading Still Unsolved

With a system in which the cars are carried to the working faces and then, when filled, are pushed or pulled beyond it and by another route from that by which the empty arrived, an efficient loading capacity can be afforded even with a small car, but there are several difficulties. If the place is running into solid coal that plan is not possible. If it is working on the end of a block of coal it can be looked upon as conceivable, but in practice such a method of operation exists only on paper. It has been tried often and in every case has been found wanting.

The method of loading a string of cars from the side of a rib—sidewall working—has been advocated and even adopted by some operators, but it seems inevitably and admittedly wasteful of coal in the long run and is to be regarded as a quite dubious plan when the cover is heavy, especially with slow hand loading. It has been used, however, and, it is said, successfully.

These difficulties are true engineering problems, but Hugh Archbald does not refer to them; perhaps he has not even considered them.

Mr. Archbald, however, it may be said, never tries seriously to solve his problem of doing away with the "unemployment-within-employment" in the coal mine except by assuming that an employer should be so ethical in his management that he cast profit to the winds and consent not only to increase superintendence but to put in many more drivers or motormen than prudence and competition would dictate. The problem is not so much one of management *per se* as of either engineering or economics. The author is good enough to quote the remarks I made at a meeting of the American Institute of Mining Engineers. I would prefer to refrain from repeating them, but as I still consider that they are as vital as I did when I uttered them, I will venture to quote some of them (they will be found on page 71 of Mr. Archbald's book):

"As to what the miner does, in comparison to what he could do, I think much may be said. We have pitched our plane altogether too low in the coal-mining industry. . . .

"There is very little doubt but that the coal miner could produce more. But there are two reasons why he does not; one is that he does not want to, and the other is that the operator does not really give him the opportunity that he would have if it were to the economic advantage of the operator to aid him in his production. Unfortunately, the miner is paid by the ton, and not by the day; consequently, the operator is not interested particularly in how many tons the miner gets out, except as it reduces the overhead. The operator cannot afford to have a single dayman idle, but he can afford to have idle several miners who are paid by the ton."

Asked to Spend Money Without Return

If the operator employed his miners by the day he would make a greater effort to keep them supplied with cars—and conversely they would make less effort to keep him supplied with coal. I pointed out, however, that the failure of the mine under the day-wage system would be due to the unwillingness of the miner to give a full eight-hour service, whereas the failure of the operator is due, under the tonnage system, to the fact that he cannot meet the needs of the miner without an undue expenditure on day labor and trackage facilities. When mining is really competitive and profits are small or even nil, and still more where losses have to be met out of savings and borrowings, as is frequently the case, the operator cannot afford to do other than run his

*Engineering Editor, *Coal Age*.

mine as others are doing—namely, with a minimum of day and monthly labor. Any other plan spells bankruptcy.

When business is prosperous and profits are high, he can and generally does employ excessive day labor, and the idleness of the miner is largely reduced thereby. The operator at such times wants a large tonnage because every ton means profit, and he is willing to employ such a force of day workers as will enable the miner to give almost his full meed of service. As soon as business gets unproductive the operator has to reduce this day force to meet competition, and the service to the miner inevitably declines.

The only cure for inefficient mine-car service is an economic one. Mr. Archbald conveniently overlooks that fact. The operator cannot employ men to work for the interest of the employee without reward. The miner might give the operator two more hours of service. He refuses. He is not to be blamed; still less is the operator to blame who refuses to operate his mines in such a manner as would inevitably put his balance "into red ink." What is the cure? Surely to provide a profit to the operator where the service to the miner is well maintained.

Is It True That What Cures Also Kills?

Day labor will afford that profit but it will be more than balanced by the loss arising from the lower personal efficiency of men so employed. With complete mechanization of the operations in the mine there would be no incentive for the miner to slacken his efforts. So mechanization seems to be the cure. But this scheme of things is not possible till our engineering methods are much improved, and with the limitations imposed by the roof conditions—the fact that the roof will not stand without support—mechanization involves many difficulties, for with an extremely expensive machine (and others can hardly be considered) the service must be better even than the hand loader requires. Consequently complete mechanization is far in the future and may never be accomplished.

Another method would be to adopt a composite plan, paying the loader by the ton and also by the day. The tonnage rate would reward the loader proportionately to his efforts and the operator proportionately to his mine-car service. This method has never been tried. In fact, with miners leaving the mine when they please and refusing to punch a clock it is doubtful whether it would work.

As I stated at the time of making the remarks quoted: If full car service were given it is doubtful whether the men would stay in the mines as many hours as they do now. If they could make a day's pay in four hours, home they would go. The double method of pay is based on an eight-hour day, and the miner even now picks up his coat after six hours.

Miner Himself Shortens the Short Day

If he had full loading opportunity he might leave after three hours, and he would not hesitate to demand his full honorarium for a day's presence in his place. Truly it is to be feared that the union would back him in this breach of contract, if indeed it would permit such an agreement to be made, so firmly is the short day for the miner established by custom even though it is in violation of the contracts as now made.

On the whole Mr. Archbald in his 148-page 5 x 8-in. book is fair and well-informed. But despite Mr. Archbald's declaration we must protest that the four-hour day in coal has nothing to do with the striking propensities of the miner. It is not in the long list of his published grievances. Why should Mr. Archbald be so disingenuous? The miner always asks for more pay or that his rate of pay be not reduced. He also wants less deductions from his pay—less rent, less blacksmithing cost and cheaper powder, though these usually are provided below cost by the company. He is human and wants all he can get, and he has a union that is so well organized that he feels he can get it. Why waste time to invent other reasons when these are obvious and clearly stated, and the other grievances are less obvious and have never been stated by the miner?

The book discusses grievances, coal-mining conditions, the mine foreman and his problem, time for the miner, amount of work, record of complaints, discouragements and the "engineering need." The mine foreman and his problem in particular is understandingly written. The engineering need, it may be said, is a plea for the introduction of efficiency engineers into coal mines.

One cannot deny that the book is interesting, that the writer is well informed if not always unprejudiced and that the coal-mine executive will find the book enlightening even though it is written for the public and, as the wording of the slipcover advertisements suggests, for university debaters especially. The debating societies in our colleges are legion and active. It would be amusing yet distressing indeed to note what gross misuse they will make of this little volume. The book is published by the H. W. Wilson Co., of 960 University Ave., New York City.

An Aid to Shippers to Foreign Markets

AMERICAN coal shippers who are desirous of seeking foreign markets for their product, or of holding or improving their trade connections abroad, will find a valuable asset in the cable service now being carried on by the Department of Commerce. This news is published weekly in *Commerce Reports*, a survey of foreign trade, by the Bureau of Foreign and Domestic Commerce, and presents, among a multitude of other items, last-minute reports of conditions existing in the foreign coal markets.

The average American coal man in position to ship to the seaboard had a taste of the export business in 1919 and 1920 and found it decidedly to his liking. Europe was then clamoring for our coal and in the flush markets that were reached, conditions were imposed by the American shippers which were impossible to maintain and which in many cases reacted disastrously on the American coal trade. To the British exporting is the result of long and careful planning, excellent shipping facilities, accessibility of foreign markets and a thorough understanding of trade conditions. It is in the last factor that we are so severely handicapped. Coal exporting is practically a new game for the United States, at least in the volume in which we do most things, and it is for this reason that the news cable service of the Department of Commerce is especially timely and worthy of careful attention by our coal shippers.

Examination of a single sheaf of these cable advices recently received reveals much valuable information. Credits offered by Great Britain, which must be met or at least considered; the tendency of Italian buyers to hold off payment in the hope of a rise in the lira exchange; terms granted American exporters in Latin America, are some subjects fully covered. Brazilian conditions are shown as improving, the Mexican economic tension is easing; Argentine imports are falling off (refused American merchandise in that country amounts to $1,250,000) and credits are difficult to negotiate; Chilean production is insufficient for domestic needs and the railroad supply is almost exhausted; foreign inquiries for coal have recently been received from Spain, Syria, etc.

Export market possibilities are not rosy now, but high costs and other unfavorable conditions which at present place us at a disadvantage with Great Britain can be lessened. When the American trade is again in position to make competitive export quotations, marked advantage will be had by the shipper who has gained a thorough knowledge of the trend of foreign commercial affairs. It is through the assimilation of just such information as *Commerce Reports* is now giving out that this background can be obtained.

R. R. Sayers and W. P. Yant recently made a report on the tannic-acid method for the quantitative determination of carbon monoxide in the blood. This report is published under Serial No. 2356 for May, 1922, Reports of Investigations, U. S. Bureau of Mines. The method of analysis described is particularly adapted to the determination of poisoning by carbon monoxide. It can be used for either a quantitative estimate or as a qualitative test in comparison with a small sample of blood from an unexposed person. The results from this method are more easily obtained and on the whole are more dependable than those yielded by any other method tried.

Problems of Operating Men

Edited by James T. Beard

Old-Age Pension and Age Limit

Basic Idea of Old-Age Pension—Advantage to Employer and Employed Alike—Need of a Practical Plan to Make Scheme Popular—Opposition by Radicals and Union Leaders

REFERENCE was made, some time since, in the columns of *Coal Age* to the old-age pension scheme, and the age limit fixed in its adoption by the Colorado Fuel & Iron Co. (Vol. 20, p. 1055).

The writer of the letter expressed a desire for the thoughts of others, particularly with reference to the 45-year age limit established by that company. It was stated that the objection had been offered by some miners who claimed that, if the plan was to be generally adopted by all coal operators, a man would be compelled to remain with the same company, after reaching the said age limit.

Basic Idea of Pension

The basic idea of the old-age pension is to make aged and physically disqualified workmen financially independent and afford them the much needed support, after having devoted the best part of their lives in useful service to society. The idea when first promulgated was socialistic, but has later been advocated as an industrial institution worthy of support.

Perhaps a more equable plan would be one that imposed the burden proportionately on the state, the employer and employee, somewhat after the plan of the Workmen's Compensation Law, which has been so widely adopted in many states.

The pension idea should commend itself to all employees of industrial labor, but to none more favorably than to the coal operator. To no class of workers is society more indebted than to the coal miner, who daily risks his life in this needful occupation and who is destined to toil in darkness, deprived of the sunshine to warm and gladden his heart.

Develops Satisfied Workers and Fosters Loyalty to Employers

No operator will deny that a good workman is an asset of the coal industry. What plan could be devised that will tend to develop satisfied workers more surely and speedily than the old-age pension, by which the miner is enabled to look forward to a much needed support when disqualified for service by reason of years?

In my opinion, the pension idea fosters a loyalty to any organization that adopts the plan, increasing its strength and efficiency. A newspaper item announced, recently, that an engineer had been retired on a pension, after 33 years of active service for a certain railroad company. During that time the man had never been suspended and the pension was awarded him in recognition of his faithful service.

Making of Homes Among Miners a Profitable Investment

The advantage this scheme offers to the miner is apparent. It insures a competency in old age and gives him an incentive to faithful and loyal service. Its tendency is to foster in him the habit of settling down and making a home for himself and family. It is a good investment, paying dividends in money saved, home attractions, health and contentment.

What is needed is a practicable plan of operation. It must be understood that an industrial pension is a business proposition. A worker cannot be eligible to receive a pension, unless he has given his employers at least twenty years of useful service.

Why anyone should complain of an age limit of 45 years is hard to understand, since the company must be protected if an old-age pension is to be made operative. Indeed, I am surprised that a lower age limit, say 40 years, was not adopted, as many miners at the age of 60 approach the period of disqualification for active service in the mining of coal.

Age Limit Discourages the Drifting Tendency of Many Miners

It is optional, of course, with a company to accept of a new employee who has reached the age of 45. Only an exceptionally physically strong man would be acceptable at that age, under the old-age pension provision; and this fact encourages men to remain in the employ of the companies whom they serve. It discourages the tendency of many miners to float from one place to another.

In closing, let me say the scheme will undoubtedly be opposed by radicals and labor unions, unless they are permitted to draft the rules and regulations controlling the proposition.

The chief objection from that source is that a certain number of years of useful service must be given the employer before the worker can enjoy the benefit of the pension. As is well known, the radical leader and the union organization demand that their members shall be loyal to that body, in any issue that may arise between them and their employers.

———, W. Va. PROGRESSIVE.

Following or Dependent Shots

Dangerous practices of miners show them to be unreliable—Firing of dependent shots unsafe—Cutting fuse too short and other bad habits—Training needed to develop good miners.

IN the many excellent letters regarding the shooting of coal off the solid, it seems strange to me that no reference has been made to the practice, so common among miners, of firing what are called "following" or "dependent shots." These are shots that depend for their safety on the previous firing of another shot, which is expected to explode first.

Many miners make a continual practice of firing such shots, which is nothing else than shooting off the solid, provided the first shot is delayed or misses fire, which is often the case. One has only to think, for a moment, of the many bad habits of miners; such as crimping a cap on the end of fuse with their teeth; opening a keg of powder with a pick; or filling a cartridge with an open light on the head; to be convinced that the average miner is unreliable in respect to his judgment of what is safe.

Men of Limited Experience in Mines Most Dangerous

Not long ago, mention was made in *Coal Age* of a miner who had had 27 days' experience in the mine. I want to say this is the most dangerous class of men with whom we have to deal. For a few days, a new miner will listen to what is told him; but, as a rule, the man soon begins to think he knows more than the mine foreman himself.

Where miners are allowed to fire their own shots, one of the most dangerous things is their habit of firing one or more dependent shots. I have seen a miner drill as many as five shotholes, one behind the other, in the square face of his room. Invariably, the miner will overcharge the first shot to make sure of its blowing down the coal and setting free the shot that is to follow. Each succeeding shot will generally have an overcharge of powder, as is the custom with most miners.

Another practice I have observed is that the first hole may be drilled 5 ft. deep, the second hole 5½, the third hole 6 ft. and so on throughout the range of four or five shots intended to be fired at the same time, one following the other in quick succession. It is fortunate if the holes are not tamped with coal dust; but the augur drillings are almost certain to be lying on the floor where they fell, which means an added danger.

Local Explosion Liable

Where such shots are fired one can expect nothing less than a local explosion of the dust and gases produced in the firing of the first charge and exposed to the flame of the succeeding shots. Too often it has happened that such a local explosion has been extended throughout the mine, by feeding on the dust accumulated on the roads and travelingways.

It is my hope that the day is not far distant when the law will require that all miners shall have had at least two years' experience at the face and undergo an examination, before being given charge of a working place. This would practically eliminate the habit of miners to cut a short fuse or bite off the match from a squib, in order to hasten the explosion of a shot, besides many other evil practices.

Training of Miners Needed

We are needing more and more a course of training for miners. It is the only thing that will develop safe miners and eliminate the dangerous practices I have mentioned. I look back to the time when I and my brother worked ten years, for my father, who was an experienced miner and would not permit us to take a place of our own during all of that time.

The result was that we learned very much about safe mining that could not be learned in a few days or a few months. Time is required to develop the skilled miner.

Crawford, Tenn. Oscar H. Jones.

Upraising Sometimes Necessary

When it is necessary to drive an upraise in a mine — Dangers and difficulties in the undertaking — How the work should be arranged.

ALLOW me to add a few words to what has already been said in regard to upraising a shaft in a mine. As stated in the letter of R. H. Benney, *Coal Age*, May 11, p. 783, the most experienced men should be employed for the work.

In my opinion, the undertaking is a difficult one and has many disadvantages in comparison with sinking a shaft from the surface. However, there are conditions when it is necessary to employ this method. I could not recommend its adoption when the depth below the surface reaches 20 or 25 yd., if anything else can be done.

In the development of a mine, it may often happen that the work has been extended to a point where it is necessary to sink an air shaft for the purposes of ventilation. At this point, the company may own the coal rights only, and be unable to obtain the permission of the land owner, looking to the handling and disposal of the excavated material on the surface.

In such case, the only recourse is to upraise the shaft from the point, in the mine, chosen for its location. As has been stated, the scheme has the advantage of eliminating the need of pumping. Also, the material excavated is dropped into the mine where it can generally be stored in abandoned places and thus avoid the expense of hoisting it to the surface.

The work is beset with difficulties even when skilled men are employed. The excavation has not gone far above the roof of the coal when the air becomes bad. Much time is consumed in idleness, waiting for the smoke to clear after a shot is fired.

Dangers Involved When Miner Works on a Scaffold

The men must work on scaffolds that are expensive to build and maintain. They are continually exposed to falling material and there is always a possibility of suddenly striking material that will run, which makes it a particularly dangerous proposition.

In addition to these dangers there is the added expense of the labor required to unload the cars of excavated material, by hand, to say nothing of hoisting what timber is needed to the top of the hole where it is put in place. A man must always be kept on the bottom to handle the cars loaded and keep the opening clear.

Where it is decided to drive an upraise I would recommend locating the shaft over a heading that will provide a way in and out for the empty and loaded cars, and thus avoid the loss of time required for switching when changing the cars at the foot of the shaft. In this arrangement there should be a single track passing under the shaft and having a slight grade in favor of the loaded cars, just sufficient to enable the ready handling of the cars.

Samuel McKay,
Supt. Harmon Creek Coal Co.
Burgettstown, Pa.

Another Letter

THERE is not often a condition arising in a mine that would justify a shaft being driven from the mine upward. The superintendent whose inquiry appeared in *Coal Age*, Feb. 2, page 212, and started this discussion, appears to favor the proposition, because it will save the expense of hoisting the excavated material, which is dropped into the mine and can be utilized for building stoppings, and because there will be no need of pumping the water from the shaft while sinking.

The advice given in the reply to the inquiry will probably change this superintendent's mind altogether, or at least put him on the fence, as to his choice of sinking or upraising. I have been engaged in work of this kind myself and, while it can be done (there are few things that cannot), I would not recommend the attempt being made; it is a dangerous job.

Pause, for a moment, and consider what a condition would exist when the workers have passed through the 6 ft. of slate and 4 ft. of sandrock. These two strata must form the foundation of further excavation. From that point upward he would have to timber the shaft for sixty feet.

Material Must Be Hoisted

This timber must be taken into the mine and hauled back to where the work is located; but the worst is not yet. Each piece must be hoisted in the hole, which means much delay and added expense. It is more than likely that the shaft is started at some isolated part of the mine where there will always be more or less delay in handling the needed supplies and removing the refuse.

The timber will generally be cut on the surface and, in that case, the dimensions of the excavation must be such as to conform to a given size. When driving an upraise it is often difficult to limit the size of the excavation, as the material is liable to break over the sidewalls, making it necessary to pack the space behind the timbers solid.

In this kind of work, it is never possible to foretell just the conditions that will arise. If it is thought best to take the rough timbers into the mine and frame them at the shaft, it will make the work of hauling that material more difficult. Moreover, the framing cannot be done as speedily or as well as on the surface.

Building the Scaffold Higher Requires Time and Labor

Scaffolding is required in upraising; and every time a round of shots is fired it is necessary to build the scaffold higher, before the work can be continued. A previous writer has already spoken of the danger to which the workmen are exposed when returning to the face, after firing a shot. The loosened material will often be found hanging and ready to drop at any moment.

Finally, when the hole has been pushed through to the surface the shaft is not finished as, generally, the wooden framing put in to support the walls, will have to be taken out and the shaft relined. Brick or concrete will often be used for that purpose, in order to make a more permanent job.

It is probable that very little of the excavated material can be used for building stoppings, as suggested in the inquiry. Labor and expense will be saved by making these stoppings of brick or concrete. Nothing is more important in the ventilation of a mine than well built stoppings.

Taking everything into consideration, there is a distinct advantage in sinking a shaft, instead of attempting an upraise in the mine. The fact of the work

being safer will convince most men that sinking is the better plan. By sinking a borehole in the center of the cut, as has been suggested in the reply, not only is the excavation kept drained, but the borehole will provide a means of ventilating the shaft besides.

Both the excavated material and all needed supplies are handled more readily from the surface. Also, the permanent shaft timbers can be put in place at once. In my opinion, it is not advisable to start a shaft, until all necessary timbers are on hand and the derrick is in place. I have known of a bad mishap occurring by reason of starting a shaft before timbers of the proper size were on the ground.

The accident happened one night, after the eleven-o'clock shift had gone home. One whole side of the excavation caved in, smashing the light timbers into splinters. It cost several hundred dollars to restore what had been destroyed, to say nothing of the delay caused by the accident. Fortunately, there was no one in the shaft at the time. When every proper precaution is taken, the work of sinking a shaft is dangerous and none but the most careful men should be employed.

Osceola Mills, Pa. S. D. HAINLEY.

Inquiries Of General Interest

Dimensions and Capacity of Centrifugal Pumps

Dimensions of Centrifugal Pumps Determined by Required Discharge Under Given Head — Peripheral Velocity of Impeller a Function of Discharge Head — Other Data

KINDLY answer, through the columns of *Coal Age*, the following questions having reference to the installation of a centrifugal pump, to be installed at the foot of a mine shaft, 1,500 ft. distant from the powerhouse where the voltage at the generator is 559 volts d.c. It is desired to know the size of pump that will be required to discharge 400 gal. of water per minute through a vertical height of 570 ft., which is the depth of the shaft.

In addition to the above, state the number of impeller blades necessary and the diameter of the impeller wheel; also the diameters of the suction and discharge pipes. What sectional area of feed wire will be required to transmit the necessary current from the powerhouse to the pump located at the bottom of the shaft?

———, Pa. INQUIRER.

In replying to this question, we would refer the inquirer to a previous inquiry regarding centrifugal pumps, which appeared in *Coal Age*, Vol. 19, p. 827. The principle of action of centrifugal pumps is there explained and the formulas given for finding the discharge of the pump under a given head.

In the present case, it is necessary to first estimate the diameter of column pipe required for a discharge of 400 gal. per min., assuming a velocity of 400 ft. per min. in the pipe, which is customary in common practice. The required diameter of the column pipe is then

$$d = 0.25\sqrt{G} = 0.25\sqrt{400} = 5 \text{ in.}$$

The next step is to calculate the friction head in the column pipe, for the required discharge when the pump is in operation, which is as follows:

$$h_1 = \frac{G^2 h}{800\, d^5} = \frac{400^2 \times 570}{800 \times 5^5} = \text{say } 36.5 \text{ ft.}$$

Adding this friction head to the actual head of discharge, gives for the effective head under which the pump must operate; thus, $h = 570 + 36.5 = 606.5$ ft.

In estimating the size of a centrifugal pump, it is safe practice to limit the head under which the pump must operate to 100 ft. This will call for a six-stage pump, in this case. The size of the discharge portal, or the required number of the pump for this service is given by the formula

$$N = \sqrt{\frac{G}{\sqrt{10\, h}}} = \sqrt{\frac{400}{\sqrt{10 \times 606.5}}} = \frac{20}{\sqrt[4]{6065}} = 2.27, \text{ say } 2\tfrac{1}{4} \text{ in.}$$

Good results are obtained whenever practicable to set the pump below the water level, in such position that the inflow to the pump will be unrestrained and have a velocity ranging from 6 to 12 ft. per second. No suction pipe is then required. Also, the number of impeller blades run from 6 to 12, depending on the size of the pump.

We will assume this pump is operated by a 60-cycle motor running at a speed of 1,750 r.p.m. The motor being direct connected or mounted on the pump shaft, the speed of the pump will be the same. But, the peripheral speed of the impeller, as determined by the head against which the pump must operate, is

$$v = 60\sqrt{2g\, h} = 60\sqrt{2 \times 32.16 \times 606.5} = 11{,}850 \text{ ft. per min.}$$

In order to develop this peripheral speed, when making 1,750 r.p.m., the diameter of the impeller wheel must be

$$d = \frac{11{,}850}{3.1416 \times 1{,}750} = 2.155 \text{ ft., say } 26 \text{ in.}$$

The horsepower required to operate this pump, taking the weight of the water as 8⅓ lb. per gal., and assuming an overall efficiency of 60 per cent, is

$$H = \frac{8\tfrac{1}{3} \times 400 \times 606.5}{0.60 \times 33{,}000} = 102.1 \text{ hp.}$$

Or $102.1 \times 0.746 = 76.17$ *kw.*

Assuming a line drop of, say 15 per cent gives the available voltage at the motor as $0.85 \times 559 = 475$ volts. The required current is, therefore, $(102.1 \times 746) \div 475 = 161$ *amp.*

The pump shaft being 1,500 ft. from the powerhouse and allowing another 600 ft. for conducting the current to the bottom of the shaft and reaching the pump, the total length of wire is $2(1{,}500 + 600) = 4{,}200$ ft. The transmission of the required current through this wire, including the return, calls for a sectional area of

$$A = \frac{10.8 \times 4{,}200 \times 161}{475 \times 0.15} = 102{,}500 \text{ circ. mils}$$

This is an 0 wire, having a diameter of 325 mils or, practically, ⅓ in.

Ventilation During Strike

Peculiar roof conditions in No.-8, Pittsburgh Seam, in Eastern Ohio — Should air currents be reduced during the strike period to prevent cutting action on roof in roads and airways?

SINCE the strike began, the question of maintaining a continuous circulation of air in the mine has been asked and different opinions expressed. Those familiar with the conditions in No. 8 seam in this locality will remember that the coal, which is here 4 ft. 9 in., in thickness, is overlaid with a drawslate running from 12 to 18 in. thick. Above the slate is a thin seam of coal of a snappy nature and having about the same range in thickness.

The purpose of this inquiry is to ascertain through *Coal Age*, if possible, what is the general opinion in regard to the disintegrating effect of the air current on the roof of mine roads and airways. Would it be better to keep the air traveling continuously, twenty-four hours a day, or shut down the fan completely during this enforced period of idleness on account of the strike?

Again, what would be the effect if we ran the fan, say eight hours a day? At its usual speed, the fan produces 30,000 cu.ft. of air per minute, in this mine, which is a drift and follows the natural bed of the seam.

Duncanwood, Ohio. P. J. GRIFFITH.

This is an interesting question, which we gladly submit to the practical judgment of those more intimately acquainted with the conditions in this seam, in Eastern Ohio. In general,

however, it can be stated that it would be better to either run the fan continuously or shut it down altogether, rather than to attempt to maintain a circulation during eight hours, each day.

The alternate operation and shutting down of a ventilating fan will generally produce, in the mine airways, an alternate dry and wet condition of the roof, which has a disintegrating effect on certain shales and other soft strata forming the roof.

Whether it would be better to operate the fan full time and at its full capacity, or to shut off the circulation entirely, is a matter that can only be determined by a knowledge of and experience in the local conditions. If this is a wet mine, or if it generates some gas, better results will generally be secured by running the fan continuously at a reduced speed. We shall be glad to hear from our many practical readers facing similar conditions.

Examination Questions Answered

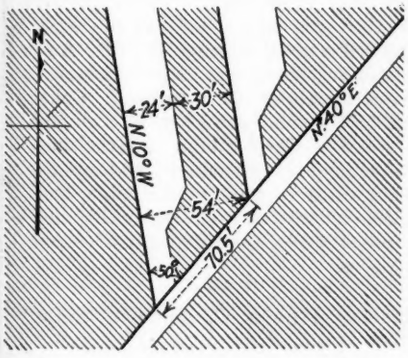
Miscellaneous Examination Questions

(Answered by Request)

QUESTION—*(a) Explain the advantage gained by driving rooms at an angle with the gangway level, in seams of moderate inclination where it is desired to take the cars to the faces of the rooms. (b) If the gangway level is driven N 40° E and the room sights are N 10° W, what angle do the rooms make with the gangway? Show by sketch. (c) If these rooms are driven 24 ft. wide, with 30-ft. pillars between them, making the room centers 54 ft., what is the distance between room centers, measured on the gangway?*

ANSWER—(a) In moderately inclined seams, the pitch is often too great to allow cars to be handled with safety on the full pitch of the seam. By driving the rooms across the pitch, or at an angle with the gangway level, it is possible to reduce the grade so that the cars can be taken to the face of the room without danger.

(b) As shown in the accompanying figure, the direction of the gangway lying in the northeast quadrant and that of the rooms in the northwest quadrant, the angle that the rooms make with the gangway is equal to the sum of these two bearings, or 10 + 40 = 50 deg.



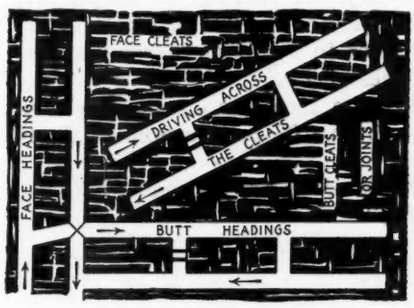
(c) The distance between room centers, as measured on the gangway, is found by dividing the distance measured square across the rooms, center to center, by the sine of the angle the rooms make with the entry. Thus 54 ÷ sin 50° = 54 ÷ 0.766 = 70.5 ft.

QUESTION—*Explain what is meant by cleavage planes in reference to geological formations.*

ANSWER—A cleavage plane, in geology, refers to a plane in which a substance divides or is readily split. The principal cleavage planes of geological formations are the bedding planes, or planes of stratification, in which the material was deposited.

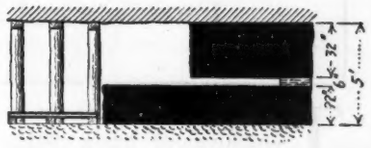
QUESTION—*Explain the meaning of the terms "cleats and joints" and state in what respect these may differ from cleavage planes.*

ANSWER—Cleats and joints are division planes that are more or less at right angles to the stratification of the material. In this respect, they differ from the principal cleavage planes, which lie in the plane of stratification. As illustrated in the accompanying figure, there are two kinds of cleats called "face cleats" and "butt cleats." The butt cleats are often called "joints." The distinction between face cleats and butt cleats or joints is that face cleats are more pronounced and continuous, while the butt cleats are short and irregular.



QUESTION—*Explain and show by sketch what is "bench mining."*

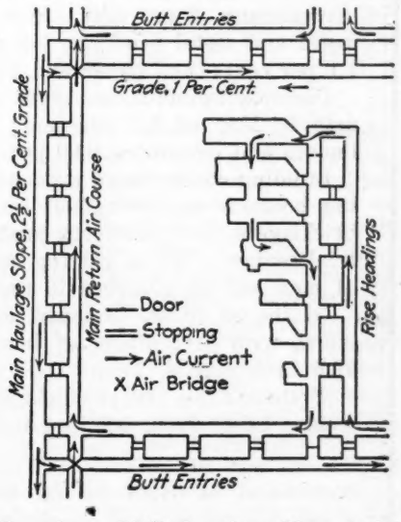
ANSWER—Many of the thicker seams of coal consist of two or more layers of coal of different quality. These layers may or may not be separated by a thin clay parting. Owing to the difference in the quality of the coal, it is often desirable to mine it in benches. As shown in the accompanying figure where two benches are separated by a clay parting, the upper bench may be mined a few yards in advance of the lower bench. The mining or undercut



is then made in the clay parting. After being mined, the upper bench is either blasted or wedged down. When this has been loaded out, the lower bench is generally mined by a light lifting shot.

QUESTION—*(a) Make a sketch of a form of panel, showing the ventilation and explain the working of a panel. (b) To what particular condition is the panel method of mining adapted?*

ANSWER—(a) In the accompanying figure is shown, on the left, a pair of slope headings having a 2½ per cent grade. Two pairs of butt entries are turned to the right off the main return air-course at distances of, say 400 ft. apart. Headings are driven to the rise of each pair of butt entries, at distances that will provide for driving rooms from 75 to 100 yd. in length and allow for a 50-ft. barrier pillar at the head of the rooms, for the protection of the cross-entries. Barrier pillars of the same thickness are also left to protect the butt entries. Rooms are then driven on the strike off these rise headings. Under favorable conditions of roof and floor, the rooms are driven to the right and left of each pair of headings, thus forming a wider panel than that shown in the figure. The butt entries are driven so as to give a grade of about 1 per cent in favor of the loaded cars.



(b) The panel system of mining is particularly adapted to the working of gaseous seams of coal, or when mining under bad roof conditions that would hinder the complete extraction of the coal by other methods.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THAT the country as a whole is rapidly getting back to an employment basis, with the exception of the coal and cotton textile industries, is shown by the industrial survey for May, issued June 5 by the Department of Labor through its employment service. "The broadening out of industry in most all lines of activity for May," the department states, "clearly emphasizes the fact that business depression is behind us. Confidence is restored. June will accentuate the upward movement. Industry is steadily expanding."

This monthly survey is based on actual figures taken from the larger industrial payrolls of the country, the statistics on which its computations are based being gathered each month by the department's special agents in 65 principal industrial centers. In all, 1,428 firms each usually employing more than 500 workers, or a total of 1,600,000, are comprised in the survey. On May 31 these 1,428 firms had 52,154 more employees on their payrolls than they carried on April 30, an increase of 3.2 per cent.

Industrial classifications showing increases in employment are: Vehicles for land transportation, 11.2 per cent over April; railroad repair shops, 4.6 per cent; iron and steel and their products, 4.5 per cent; stone, clay, and glass products, 4.5 per cent; lumber and its manufacture, 3 per cent; food and kindred products, 2.96 per cent; metal and metal products, 1.5 per cent; textiles and their products, 1.1 per cent; and paper and printing, 0.8 per cent.

Decrease in employment was shown in leather and its finished products in May of 3.9 per cent; tobacco manufactures, 2.9 per cent; liquors and beverages, 0.99 per cent.

Building construction widened in May over April. A genuine building boom is on throughout the country. A shortage of carpenters, bricklayers, and plasterers exists in many of the 231 principal industrial centers. Wheat cutting has started in Texas, and large numbers of men will be absorbed in the harvest fields.

Of the 65 cities, 49 report employment increases during May over April, with percentages of increase from 0.02 in Paterson, N. J., to 19.5 in Memphis, Tenn.

Sixteen cities report employment decreases, the percentages of decrease being from 0.2 in Louisville, Ky., to 11 in Cincinnati, Ohio.

Betterment in South Central Zone

The steady increase in employment shown in most industrial lines for the last four months continues in the South Central district. There is practically no unemployment in the principal cities and towns. Considerable activity in tobacco planting is in evidence. Building is increasing steadily. Cotton prices are encouraging farmers to increase this annual crop. Coal mining shows a remarkable increase, while lumber and textiles show a slight decrease. The iron industry is two-thirds of normal capacity in the Birmingham district with indications of further employment within the next thirty days.

INDUSTRIES REPORTING AN INCREASE IN EMPLOYMENT IN MAY, 1922

Industries	Amt. of Inc.	P.c. Inc.	Weight*
Vehicles for land transportation	24,446	11.2	14.5
Railroad repair shops	2,843	4.6	3.8
Iron, steel and their products	16,959	4.5	23.7
Stone, clay and glass	735	4.5	1
Lumber and its manufacture	747	3	1.5
Food and kindred products	3,740	2.96	7.8
Metal and metal products other than iron and steel	1,370	1.5	5.4
Textiles and their products	2,590	1.1	13.9
Paper and printing	392	0.8	2.9
Miscellaneous industries	1,051	0.4	16
Chemicals and allied products	152	0.2	4.5
Total	55,025		

INDUSTRIES REPORTING A DECREASE IN EMPLOYMENT IN MAY, 1922

Industries	Amt. of Dec.	P.c. Dec.	Weight*
Leather and its finished products	1,979	3.9	2.9
Tobacco manufactures	884	2.9	1.8
Liquors and beverages	8	0.99	.05
Total	2,871		

*Per cent employed May 31 to total reported employed in 14 groups.

Mid-Atlantic Revival Is General

The industrial advance prevailing in the Middle Atlantic district during recent months is steadily gathering momentum, a decided betterment being evident in all lines. The great volume of all types of building construction has materially increased operations in almost every line of trade and industry and indicates a return to normal conditions. Building operations in the various cities have absorbed the available supply of building trade mechanics with an apparent shortage of skilled labor. Marked advances and increased operations in the automobile and accessories industries, and further improvement in the iron and steel industries is reported. The railroad industries show substantial gains in some lines with reduction of forces in others.

Less Idleness in New England

Employment conditious throughout New England show a marked improvement. Unemployment continues chiefly in textiles, due to labor suspension. While some improvement is noted in the metal trades, conditions are not back to normal as yet. In certain sections unemployment exists in the shoe industry, although improvement is indicated, as a number of factories reopened last month and many workers have returned. The amount of unemployment in unskilled labor and the building trades has been materially reduced.

Work Full Time in Middle West

Manufacturing industries in the Middle West show a definite improvement in employment conditions. A return to full-time schedules is apparent in all sections. Employment conditions in the stock yards are improving. A decided shortage of farm hands is reported in the corn belt. Rubber industry showed a gain in employment. Automotive, steel and iron industries have increased their forces. Coke production and employment also increased. Employment shows improvement in structural and architectural iron work, stone, clay and glass industries. The sawmills and planing mills have added more employees.

Industrial Gains Continue in South

A marked but gradual improvement is evident in all industrial lines in the South Central district. Improvements are particularly noted in coal, iron and steel, stone, clay and glass products. Building construction is active. Marked improvement is evident also in the textile and lumber industries. Farm labor is in demand in many sections.

Illinois Mining Institute Holds Busy Technical Meeting Cruising from St. Louis to Keokuk on Mississippi

Importance of Bottom Layouts—Smith Advocates Home-Made Power—Clayton Answers Smith—Are Alternating-Current Cutters Dangerous?—Stone Dust Only Cure for Franklin County Explosions

BY E. W. DAVIDSON*

A HUNDRED Illinois mining engineers and a few guests spent Thursday, Friday and a part of Saturday of last week on board the stern-wheel river steamer "Golden Eagle" cruising the Mississippi from St. Louis, Mo., to Keokuk, Ia., and back. It was the annual outing and technical session of the Illinois Mining Institute. While the trip lacked nothing in good fellowship and carefree joy, be it said to the credit of the Institute, an interesting and instructive program of papers and discussions on such subjects as modern mine-bottom layouts, safety methods and purchased power versus locally generated power for mines held a great deal of undivided attention during four sessions, each more than two hours long. The Institute is getting down to business. Prof. H. H. Stoek, of the University of Illinois, presided. A good deal of the material developed at the Institute outing will appear in later issues of *Coal Age*.

The steamer left St. Louis at 11 a.m. June 8 and proceeded slowly up the river, touching at Quincy Friday morning and stopping at Keokuk that afternoon. The boat, with everybody looking interestedly over the rail, went through the locks at the end of the world-famed Keokuk dam, landed its passengers, turned around and took the Institute aboard again early in the evening for the trip to St. Louis. During the four hours ashore the entire hundred men were the guests of E. I. du Pont de Nemours & Co., whose largest powder plant occupies a tract of land three miles west of Keokuk.

The plant has been making powder there for 32 years, but never before had even a single visitor been shown through it, such is the scrupulousness with which the company practices safety. Unprecedented though it was, the whole Institute, after it had been "frisked" thoroughly for sulphur matches, was taken through the scattered plant, in groups of five men each. No powder was in process of manufacture at the time. Supper was served in the company's club house. Then the party was motored back to the river. Some made a hasty visit to the immense power station at the dam before the "Golden Eagle" left the wharf.

D. D. Wilcox, superintendent of the Superior Coal Co., opened the program Thursday morning with a paper bringing out the necessity of laying out a mine bottom not by rule of thumb but by the best engineering practice the coal-mining industry has developed. He said too many mines are excellently equipped on top only to have their production expensively hampered by a poor arrangement underground.

J. H. Haskins, state mine inspector, traced the history of coal mining in this country from early days upward, characterizing each phase by the type of haulage used: First dogs, then mules and then electric locomotives. He suggested a number of changes in mining methods at or near the face which he thinks would reduce accidents, get out coal with less explosives and with less degradation.

D. J. Carroll, chief engineer for the Chicago, Wilmington & Franklin Coal Co. explained briefly the bottom layout at his company's new Orient No. 2 mine, which is expected to hoist from 1,000 to 1,200 tons per hour using 6-ton mine cars, 20-ton haulage locomotives and two 13-ton skips with rotary dumps and bottom weigh pans. An auxiliary shaft, he said, was being provided and it could hoist 2,500 tons a day.

O. J. Pleschner, mining engineer for the United States Fuel Co., declaring that many mines are pretty outside but pretty rotten within, described the shaft layout and four-entry system which has been developed at Westville and which Mr. Pleschner thinks is good enough to square up with even the best of top equipment.

A short description of the bottom layout at the new Glen Rogers mine, operating in the Beckley seam in West Virginia, a layout designed by Carl Scholz, was read by Dr. John Rutledge. The mine is designed, when fully developed, to hoist 13,000 tons daily—8,700 by the main shaft and 4,300 by the airshaft. The mine plan provides that cars never turn around but always arrive at the bottom "right end to."

The relative merits of purchased power for mines versus power generated at the mine got a thorough airing when J. Paul Clayton, vice-president of the Central Illinois Public Service Co., read a spirited and effective paper setting up the central station's case and Prof. Stoek read one prepared by C. W. Smith, chief engineer for the Nason Coal Co., describing the Nokomis mine power plant, which Mr. Smith figures produces power for 9.88c. per ton of coal hoisted when the mine is working only at 70 per cent of full capacity. He estimates that when working at full blast the cost would be reduced to 7c. He had calculated that purchased power would cost his mine 9.31c.

NOKOMIS PLANT BUYS POWER DURING STRIKE

"Mr. Smith didn't tell the whole story about the Nokomis plant," said Mr. Clayton in a sort of rebuttal, after the reading of the Smith paper. "He didn't say that right now, during a strike, he shut down this low-cost plant and is buying power from us. It is cheaper to do so. The plant is really not complete. What if that 1,000-kw. turbo-generator should break down? Good engineering practice, of course, would require that an auxiliary machine be always ready to go into service. The only reason why an expensive auxiliary wasn't installed there is that our power line is just outside the door. So in reality a much greater investment should be figured into that plant before its performance is compared with the service afforded by purchased power." Mr. Smith was not there to make answer.

Following two papers on power a discussion arose over the relative dangers of using direct current and alternating current at the working face. Mr. Clayton thought that with the same voltage both kinds of current presented equal danger. The mining public is impressed with the risk of using alternating current merely because with it the voltage delivered to the machines comes so much nearer the full rated potential than it does when direct current is used. If the precautionary measures commonly known and adopted were practiced in the use of alternating-current cutters Mr. Clayton thought that accidents would not occur. Mine Inspector Haskins declared that although more machines use direct current than use alternating current yet 80 per cent of the electrocutions in Illinois are caused by the latter.

H. V. Patterson, engineer for the American Coke & Chemical Co., joined the boat party at Quincy, and read a description of the new process of coking installed by his company at its Granite City (Ill.) plant, which, he asserted, brings Illinois coals at last within the coking class. In the discussion which followed, Institute members were auxious to know whether the new process would successfully coke all the Illinois coal. Mr. Patterson wasn't positive of the entire list of coals that have been coked by his company

*Western editor, *Coal Age*.

but he enumerated several from the southern counties as well as coals from the Cambridge region in Ohio, from western Kentucky and from California. The latter coal, he said, was practically lignite. He prophesied that the Roberts coking process, owned by his company, will open up new outlets and new markets for Illinois mines and Illinois operators will be enabled to enter the byproduct market.

Great interest was aroused by J. E. Jones, safety engineer of the Old Ben Coal Corporation, when he read extracts on safety methods and accidents in Franklin County from a voluminous and exhaustive report which he is making to his company after long and expert study. Next to gas, he said, coal dust is the cause of most of the explosions in Franklin County. His company's experience seems to indicate, he said, that a mine cleaned and watered by the most thorough methods known is little, if any, safer from coal-dust explosions than one knee-deep in dust. Neither frequent cleaning nor constant watering gives sufficient protection, hence he devised, and his company adopted, a shale-dust system for damping out explosions.

By this method shale from the No. 6 seam in Franklin County pulverized to a point where all of it goes through a screen of 150-mesh, 97 per cent through 200-mesh, and 92 per cent through 255-mesh is suspended in delicately balanced troughs along the roofs of entries so that the rush of air ahead of the flame of an explosion dumps the non-inflammable dust into the atmosphere. He says it extinguishes fire and reduces the heat so quickly that unhurt men within the explosion zone can soon breathe with safety. In Mr. Jones' opinion, shale dust, next to permissibles, is the best protection a mine has against extensive damage by explosion.

Mr. Jones' studies of dust dangers reveal the fact that dust in aircourses is far more combustible than that in haulageways and that dust on ribs and roof of haulageways is more dangerous than that on the floor. The percentages of combustibility he gave were these: For aircourse dust, 79 per cent; dust near working faces, 68 per cent; on roof and ribs of haulageways, 65 per cent; on haulageway floors, 52½ per cent. Dust-laying water, he pointed out, damages the mine timbering.

Mr. Jones read some interesting figures showing, among other things, that the accident rate in Franklin County is much above the average of the state and that in 1919, when that clause of the compensation law went into effect providing that an injured miner may collect compensation from the day of the injury providing he is unable to work at the end of the fourth week, the rate of non-fatal accidents bounded sharply upward though the percentage of non-fatals is constantly going down. He concluded his paper with a long list of changes in mining methods which he would suggest as a means of reducing accidents.

Douglas C. Corner, mining engineer of St. Louis, read a paper discussing the merits of several modern types of loading machines, and E. C. Reeder, chief engineer of the Hillside Fluorspar Mines, described fluorspar mining and milling at the last session of the Institute, which was held on board the boat St. Louis bound.

Trade Commission Report Shows Investment And Profits in Bituminous Coal Mines

INVESTMENT and profit of the bituminous-coal industry for the six years, 1916-1921, are covered in a report to Congress by the Federal Trade Commission on June 1.

The report covers only 1,126 companies producing 32 per cent of the tonnage. The commission notes that for the last three years, owing to the injunction in the Maynard case, it has been unable to get complete reports, and for that period it uses figures collected by the National Coal Association, for which the commission will not vouch.

The average rates of profit for the six years 1916-1921 are given as follows:

1916	8 per cent	1919	6 per cent
1917	29 per cent	1920 (9 mos.)	23 per cent
1918	18 per cent	1921	3 per cent

In the first three months of 1920, the report says, operators in Ohio, Kansas, Tennessee and West Virginia earned from 5 per cent to 18 per cent under Fuel Administration control. During the peak of panic prices in 1920 (August) they were making net margins for the month which, according to the National Coal Association returns, were at the rate of 59 per cent in Ohio, 57 per cent in West Virginia, 64 per cent in Tennessee and 79 per cent in Kansas, although the average price for August, 1920, in none of these states exceeded $5.23 a ton.

The average investment per ton of output is fixed by the commission at $3.12. To get its final figures on average rates of profit the commission has apparently taken this investment estimate and divided it into net margins ascertained by the commission for other groups of companies, not entirely identical, for the years 1916-1918, and margins for still other groups of companies reporting to the National Coal Association for 1919, 1920 (nine months) and 1921.

The commsision has revised its definition of the term "margin." As used in this bituminous report the term "net margin" means the difference between production cost and sales realization, less actual selling expenses. Hitherto the "margin" reported by the commission had to cover selling expense. The report says that under the new plan the net margin, except for "certain very minor financial items of expense, some of which are of a doubtful nature, is equivalent to the net operating income before payment of interest or federal taxes."

The commission believes that under its organic act it possesses full power to require from operators the facts touching the ownership of the coal supply and the production and trade in coal, and it is seeking final legal determination of the scope of its powers in the Maynard Coal Co. case and a similar case brought by twenty-two steel companies, which latter case is now pending in the Court of Appeals of the District of Columbia, having been argued on May 22.

An important fact emphasized in the report is that the rates of return of many companies were reduced through inclusion in their investment of vast tonnages of coal deposits far beyond what is necessary for use during the life of the present mines and mining equipment. Proper accounting would keep separate books for the business of mining coal and the business of holding coal lands for far distant use. Then the net margin made in the sale of coal could be divided by the investment reasonably necessary to mine and sell the present output of coal and the resultant rate would be the real rate of return on the present operations in the coal business. As it is, the inclusion of investment in excess coal lands makes the rate of return, and therefore the price of coal, appear more reasonable than it otherwise would.

The commission states its conclusions as follows:

"The principal conclusions in the matter, which are supported by the testimony of many coal operators, are:

"(1) The need of more accurate and more complete information regarding the ownership of bituminous-coal deposits and coal mines, the true investment therein and the true profits arising therefrom.

"(2) The need of ascertaining the profits of selling companies owned by or affiliated with mining companies (no profits of such companies being included in this report) and also of other wholesalers or dealers in coal.

"(3) The need of establishing the coal industry in public confidence and protecting it by devising means of federal supervision and publicity, so as to avoid periods of excessively high prices and of severe depression."

THE FEDERAL TRADE COMMISSION has again taken up the Maynard Coal case, which it had laid aside pending its attention to the suit of the Claire Furnace Co., involving the same issues as to its right to collect cost data of basic industries. The commission has filed a brief opposing the issuance of a permanent injunction in the District of Columbia Supreme Court, which had issued a temporary injunction against the commission. This case is expected to follow the Claire Furnace Co. case to the Supreme Court.

Senatorial Coal Inquiry, Started by Retailers, to Be Held Up While Hoover Plan Is Tested

By Paul Wooton
Washington Correspondent of *Coal Age*

SENATE investigation of coal prices probably will be deferred pending further developments in the trade as to the operation of Secretary Hoover's price recommendations. This is the outcome of a conference held by Senator Borah, chairman of the Senate Committee on Labor, with Secretary of Commerce Hoover. Senator Borah announced that if the operators and retailers work together and will co-operate to protect the public in the matter of prices he will not favor at this time any investigation and will let the price proposition work itself out.

"But if the maximum which has been fixed by Mr. Hoover is going to be used by the operators as a minimum price and thus pushed on to the retailers, and the operators and retailers together take advantage of the situation to boost the price to the public," said the Senator, "I would favor an investigation to force a complete exposition with a view to laying the foundation for public control."

The trouble was started by the retailers who carried their fancied troubles to the Senate. A flurry of discussion in the Senate arose on June 8, at which the operators were caustically attacked by Senator Walsh, of Massachusetts, and several other Senators, but they were defended in turn by Senator Sutherland, of West Virginia. The deliberate statements made repeatedly during the discussion in the Senate to the effect that the Secretary of Commerce had been buncoed by the coal operators into authorizing large increases in coal prices led Secretary Hoover to issue a statement showing just what has happened in the matter of bituminous-coal prices.

The statement, dated June 9, shows the following average of spot prices of coals representative of 90 per cent of the total output of the United States, compiled by *Coal Age*, which indicates the results of the effort to restrain the rise of prices at the first of June:

Week of	Average Spot Price	Index No. (June, 1914=100)	Week of	Average Spot Price	Index No. (June, 1914=100)
March 27.....	$2.05	170	May 8.....	$2.78	230
April 3.....	2.06	171	May 15.....	3.16	261
April 10.....	2.19	181	May 22.....	3.67	303
April 17.....	2.23	184	May 29.....	3.25	269
April 24.....	2.49	206	June 5.....	3.08	255

The flare-up in the Senate, as was revealed by the debate, was prompted by complaints made verbally to numerous Senators by representatives of the retailers. Anti-administration Senators and those with socialistic leanings listened eagerly to charges against Secretary Hoover and the coal operatros. They made haste to interpret these charges on the floor of the Senate and in various ways reveal that their knowledge of the situation was inaccurate and far from comprehensive.

The course pursued by the retailers is being criticized by disinterested observers. It should be pointed out that there is no evidence that the retailers who came to Washington represented retailers generally. The movement had its origin in Chicago and the attacks on Secretary Hoover seem to have been inspired in that city. Chicago retailers are said to have taken offense when the Secretary of Commerce made it clear that he would oppose any plan which would allow retailers to dispose of stocks at replacement prices. In that connection Secretary Hoover made the following statement:

> The essential thing about the coal prices is that the runaway market has been stopped, prices have receded from those reached on May 15 except for a small tonnage from those producers who refuse to co-operate, and the public has so far been protected from a repetition of 1920. Some of the Senators have been misinformed by misleading statements from a small group of retail dealers who object strenuously to any attempt to restrain prices.

Secretary Hoover also addressed the following letter, dated June 8, to Homer D. Jones, president of the National Retail Coal Merchants' Association:

"I am in receipt of your letter of June 6, which shows a good deal of misunderstanding of the situation. Your letter gives the impression that the householder should be informed by me that retailers are warranted in advancing the price of coal by $1.75 per ton as the result of negotiations by the administration with the operators, and in support of this you make certain statements to which I cannot agree.

"First, you give the impression that spot smokeless coal for *household purposes* was selling at $1.75 prior to the strike and that at $3.50 maximum for *run-of-mine* the householder is burdened with an advance of $1.75. From the quotations you append to your letter the price of 'run-of-mine' and slack (steam coals) prior to the strike was $1.75 to $2, but from the very quotations you give me it is evident that for lump (which is the householders' main interest) the prices prior to the strike were $3 to $3.25, and not $1.75, as might be inferred.

"Under the request I have made to the operators that they should adhere to the Garfield scales plus such alteration as changes in production costs warrants, and that in the case of smokeless coal they should not exceed $3.50 for run-of-mine and $3.75 for lump, you will see that those who are justified in asking the maximum would have advanced lump over even pre-strike prices by 50 to 75c. per ton, and not $1.75. In other words, you have ignored the great decrease of differential in favor of the householder that has been suggested by me to the operators.

Prices at Peak Before Hoover Took Action

"Second, your letter seeks to give the impression that there was a rise of $1.75 per ton in smokeless after my statement of June 1. You are well aware that the prices of coal generally reached their peak above this on May 15, before I first became active. Today smokeless lump exceeds your quotation for pre-strike by about 25c.

"Third, I am glad to note your statement confirming the fact that retailers have large stocks of pre-strike coal. My recommendation to the retailers was that in public interest and the interest of the coal trade the retailers should reserve their pre-strike coal, or their contract coal, which they obtained at pre-strike prices and much of which came from the districts of shorter rail haul and therefore lower cost, for the smaller householders, and that it should of course be sold at actual cost plus a fair handling charge, and that any coal bought at strike prices should be sold to the larger consumers likewise at cost and fair handling charge. As you will see, the increases since the strike are largely for run-of-mine and therefore for steam coal.

"In reply to the statement of your association at our conference that it was necessary for the retailer to sell his coal at replacement cost, thus advancing all pre-strike coal to strike coal prices even from longer-haul districts, I stated that I thought it would be very unfair to the consumer and would constitute at least moral profiteering.

"Fourth, I would again call your attention to the fact that you misquote the statements issued here when you say that the price of coal has been fixed at $3.50 per ton. There has been no price fixed for coal. The operators were requested by me: To co-operate with me in carrying out my proposal 'that Garfield prices for run-of-mine coal should be the basis for computing sales prices, with such adjustments as are necessary to include the wholesale selling costs, changed conditions at the mines, and other factors that will be fair to the public and to the operators and will maintain production of coal.' Any agreement to adhere to this is a moral agreement between each operator and myself.

"Further than this, I have expressed the view with regard

to the Alabama fields, in following the above, that changes in conditions did not warrant a price in excess of 25c. under the Garfield scale, and that in the smokeless fields they did not warrant a price in excess of $3.50 for run-of-mine, with a differential of 25c. for lump instead of the pre-strike differential of 75c. to $1. Many operators having low costs are upon this formula selling considerably below this maximum for spot coal. I note that you ignore the whole question of a just price to the mines upon which production can continue.

"Fifth, I note that you state: 'Our association is opposed in principle and as a matter of sound business to governmental policy, official or unofficial, or to legal control of the coal business whether with respect to production or distribution.'

"I assume I am to take from this that your association does not wish to co-operate in the prevention of profiteering in this time of emergency. I notice there is an entire change of sentiment from that expressed at our conference at this office, when you strongly urged that a restraint in price was necessary in the public interest, and that you considered the action taken by the administration had prevented a runaway market. I cannot believe that the change of views which you here evidence at all represents the vast majority of retail coal dealers in the country because in their intimate contact with the needs of the householder I have found from inquiry that in the great majority of places they have made no attempt to secure unusual profits—that they are making every effort to supply their customers and to charge them simply the cost of their stocks of coal or their contracts for coal plus a reasonable handling charge.

"Sixth, it does seem to me that the retail coal dealers could play a fine part in this emergency if they would follow this suggestion:

(a) All coal to be sold at cost plus a reasonable handling charge.

(b) The cheap pre-strike and contract coal to be reserved for the smaller household trade.

(c) Steam and larger domestic consumers to be supplied from current purchases plus a reasonable handling charge.

(d) Co-operate to prevent rising mine prices, for some districts are refusing to accept the formula I have outlined above and are asking $5 per ton.

(e) Handle coal on straight lines from operator and wholesaler without speculative resales in the trade.

"By such co-operation I feel sure we can save the public from runaway prices such as we witnessed in 1920, thus saving to them several dollars per ton—of more interest than questions of 25c. or 50c."

On June 13 Mr. Hoover said the retailers had not yet accepted the conditions named in the last paragraph of his letter, but added that he thought they would co-operate.

In the course of the debate in the Senate it was charged that the operators are selling coal at the spot price and are not making shipments on their contracts. This led Senator Sutherland to say:

"There is absolutely no basis for the statement that any contract was violated and I am sure the Senator [Mr. Borah] misapprehends the situation or has been misled by the men who have been talking to him. Contracts for the sale of coal to wholesale and retail dealers in the cities of Chicago and Detroit are made upon the condition that they be adjusted each month according to market conditions. It perhaps is true that on May 31 the operators told their customers that during the ensuing month they would have to pay the market price. That was not a violation of the contract. It was pursuant to a contract thoroughly understood by those wholesalers and retailers.

"The very wise and far-seeing action taken by the Secretary of Commerce is to prevent what happened in 1920. It was done with the cordial co-operation of coal operators who were in a position to get six or eight dollars a ton, and next week more, if they chose to do so, as other people do when they take advantage of market conditions. Patriotically they have agreed to co-operate with Secretary Hoover in an effort to prevent such conditions as occurred in 1920. I do not know of another industry where the men engaged in it have subjected themselves so willingly to governmental suggestions to keep down prices in the interest of the consuming public."

Senator Lenroot asked at one point in the discussion whether there is any remedy for the coal situation short of nationalization or whether there is any remedy that Congress could afford to apply short of nationalization. To this Senator Walsh, of Massachusetts, replied: "I think there are many remedies. To tell an indignant public that has been gouged and robbed because of emergencies like this that we are powerless is absurd and ridiculous. It is a blow at our institutions and our capacity. I believe the government could step in and say: 'Unless you settle this strike, unless you come together on mutually satisfactory terms, rather than let our people suffer, rather than have our people profiteered upon, we propose to step in temporarily and conduct this business.' "

Senator Calder, of New York, said that unless some remedy is found it will not be long before the country will compel Congress to deal with this subject as it has with water. In reply to that suggestion, Senator Sutherland declared that such a course would result in the same failure as did the government's effort to operate the railroads. "The inevitable result of government ownership or operation of coal mines," he said, "would be to increase vastly the cost of coal to the consumer."

Senator King, of Utah, said that "it ought to be understood by both the operators and the miners that the government, in the interest of the people, is not going to lie helpless indefinitely, and that it will take such measures as may become necessary in the interest of the people."

Secretary Hoover was in Youngstown when he heard that Senators Borah and Walsh were planning to take some action in the coal matter. This led him to send the following telegram to the coal section of his department:

I am delighted to learn from the press that Senators Borah and Walsh have taken on the job of restraining coal prices with the retailers or other parts of the coal trade. The field is clear for any action they may desire to take, as no action has been taken beyond the responsibility I assumed in public interests of asking each individual operator that he should in the future not exceed the last Garfield war scales, with such changes up and down as the altered conditions would warrant, and I have made the statement that such changes should not exceed a maximum price in average of 25c. below the Garfield scale in some districts or about 50c. above in others. The result has been to reduce the strike prices as much as $2 in certain districts and should save the public from a further ascent to $10 or $12 mine prices as in 1920. If Congress will provide a better emergency method, I shall indeed be glad if they would do so, as the administration has no powers but persuasion and the willingness of the majority of the operators to co-operate. In the meantime, as many retailers have upward of thirty days' supplies on hand of pre-strike coal, much of it from districts of short rail haul, I hope the Senators will get the retailers to comply with my request that the retailers do not mark up the price of this coal to the public.

Tiring of the politics being played by the retailers, Secretary Hoover on June 10 called upon Roderick Stephens, chairman of the board of directors of the National Retail Coal Merchants' Association, to "do away with disputes on trivial questions and enter upon co-operation with me." He called attention to the fact that the retailers have made no answer to his request that they co-operate in the emergency. He asked Mr. Stephens flat-footedly "whether your association will or will not undertake to protect the consumer" by co-operating in the way set out in his letter of June 8.

Coronado Coal Co. Seeks Reargument

THE Coronado Coal Co. has obtained from the U. S. Supreme Court permission to petition the court for a reargument of the case decided June 5 and in the meantime the court record has been stayed for ninety days, during which the $800,000 appeal bond filed by the national organization of the United Mine Workers of America and the district union will continue effective. It is understood that this status will be maintained until the Supreme Court convenes next October.

While holding that under Sections 7 and 8 of the Sherman Anti-Trust law labor unions were suable, the court held that in the present case the national organization of the United Mine Workers was not responsible for the strike on which it was based, but solely District 21, and that the case against this district organization, involving a verdict of hundreds of thousands of dollars, would have to be retried in the Arkansas federal courts.

Consumers Had 32,000,000 Tons of Coal June 4, According to Hoover Estimate

IN RESPONSE to Senate Resolution 298, calling for information on the coal situation, Secretary Hoover on June 5, 1922, made a formal reply in which he reviewed the conditions of supply and demand, prices and the status of the strike.

He estimates the consumption of bituminous coal, May 1 to June 4, at about 65,000,000 tons. Taking into consideration production since the strike began and stocks on hand April 1, he reports that there should have been about 32,000,000 tons in consumers' storage on June 4, in addition to approximately 10,000,000 tons in transit. He points out that in the two years ended May 1, 1920 and 1921, production of bituminous coal was respectively 455,000,000 and 473,000,000 tons.

Discussing prices the report distinguishes between contract and spot coal, says that the amount under contract is variously estimated at from three-eighths to three-fourths of the production; that prices on old contracts are undisturbed by the strike and that "spot coal receives the full impact of the new demand." It was pointed out that for various reasons non-union coal was sold at or below the cost of production prior to the strike. The prices mounted rapidly after April 1 and to prevent a repetition of the price panic of 1920 it was deemed necessary to use the influence of the administration to halt price advances.

It was pointed out that governmental agencies have no legal authority to terminate or intervene in the strike but that informal proposals were repeatedly made to both sides in which they might concur with hope of settlement.

March Smokeless Output 1,689,420 Tons More Than a Year Ago

PRODUCTION of West Virginia smokeless coal during March, 1922, totaled 3,399,571 net tons, an increase of 1,689,420 tons compared with the corresponding month of 1921. The tonnage produced and shipped by distircts was as follows, in net tons:

	February 1922	February 1921	March 1922	March 1921
Pocahontas	1,425,255	859,630	1,594,250	827,410
Winding Gulf	670,803	271,541	766,210	331,656
New River	491,975	285,520	600,881	282,820
Tug River	386,980	227,515	438,230	268,265
Totals	2,975,013	1,644,206	3,399,571	1,710,151

Shipments of smokeless during March last by the Norfolk & Western R.R. totaled 2,032,480 net tons; by the Chesapeake & Ohio, 680,490 tons; by the Virginian Ry., 686,601 tons. These three railroads moved the following tonnage by districts during March, 1922:

NORFOLK & WESTERN RY.

Pocahontas	1,594,250	Clinch Valley	158,875
Tug River	438,230	Kenova	163,335
Thacker	505,375	Total	2,860,065

CHESAPEAKE & OHIO RY.

Logan	1,351,840	Coal River	172,470
New River	513,910	Kentucky	370,510
Winding Gulf	166,580		
Kanawha	128,930	Total	2,704,240

VIRGINIAN RY.

Winding Gulf	599,630	High Volatile	19,372
New River	86,971	Total	705,993

Coal Movement Gains by 9,403 Cars

LOADING of revenue freight during the week ended May 27 totaled 821,121 cars, compared with 792,459 cars the previous week, or an increase of 28,662 cars. This was also an increase of 25,786 cars over the corresponding week last year, but a decrease of 77,048 compared with the corresponding week in 1920. Coal loadings during the week of May 27 totaled 91,370 cars, an increase of 9,403 over the preceding week, but a decrease of 74,241 cars compared with the same week last year, and a decrease of 83,242 cars compared with the same week in 1920. Coke loadings totaled 8,851 cars, a decrease of 484 cars compared with the preceding week.

Hoover Price Plan Necessary and Timely, Is Opinion of Survey Director

DR. GEORGE OTIS SMITH, director of the U. S. Geological Survey, is thoroughly convinced that Secretary Hoover's effort to prevent a flurry in coal prices is both necessary and timely. His statement in reference to the effort to prevent a runaway market follows:

"After attending the conference which the Secretary of Commerce has had with the coal operators, as well as living with the coal question for weeks, I am fully convinced that the plan Secretary Hoover is engineering in the interest of the public holds a larger promise of keeping coal prices down than any other move that is feasible at this time.

"In simple terms of current coal production and consumption the present situation is loaded. Since April 1 our mines have put on the cars only about half as much coal as the country has burned. Fortunately, the output is slowly increasing, but no possible stocks of coal in storage can long stand this drain of three and one-half to four million tons a week. Yet the complacent public sleeps, seemingly awaiting some explosion to arouse it to action. Such an effective alarm could come in the shape of a sudden jump in coal prices, but Mr. Hoover and the coal operators have not thought it safe to permit the past to be repeated, and they are agreed that the safety-first move is to put some definite limit on prices.

"A buyers' panic and a runaway market usually happen at the same time, and each aggravates the other. Consumers with foresight, especially the largest consumers, bought large supplies of coal while the buying was good, but others who were less wise did not stock up, and these 'foolish virgins,' as Secretary Hoover has called them, will be the first to find themselves short of fuel. Their plight is partly of their own making, and to judge from the $8 and $10 spot prices of 1920, many of them, once awake to their need, will try to buy at any price.

"It is obvious that with this condition of undersupply of many consumers, coal production needs to be stimulated, and a fair price, to accomplish most, must be a generous price. Furtheremore, the Secretary's decision as to a limiting price had to be reached without delay. It was imperative that even the high-cost producer be encouraged to contribute his tonnage, and therefore a fair maximum price was established for as wide a territory as possible, and the coal operators were urged to speed up production. Tons mined are far more important to the country than cents saved.

"The buying public should keep in mind that the $3.50 which is set up as a fair price for most of the coal fields south of the Ohio and Potomac is a maximum price and that it applies only to spot coal. More than half of the present output of these fields is still under contract and in view of the steadier business these contracts permit, the contract coal is normally delivered at much lower figures, and those who will insure themselves with new contracts can also get much better terms than this spot price.

"Moreover, the maximum fair price is set up as only a temporary measure to steady the nerves of what threatened to be a runaway market. It is hoped that this $3.50 price will become only a mark to show where the 1922 price of coal was halted. A repetition of the $8, $9 and $10 prices of 1920 is what Mr. Hoover is trying to avoid. The public should remember that two weeks ago, when the leading coal producers were first called to Washington, the price had begun to jump to $4 and even higher. The appeal then made to the sellers of coal for co-operation fortunately met with a sympathetic response.

"With these facts before me, I question either the logic or the memory of whoever attacks this co-operative move in which the representatitves of the public and the coal operators are joining."

Kinds of Haulage and Cutting Machines in Coal Mines of United States in 1921*

By W. W. Adams†

In 1921 5,064 coal mines out of 7,088, or more than 71 per cent, were using animal haulage, according to a statement showing the kinds of haulage and cutting machines used in coal mines of the United States compiled by the U. S. Bureau of Mines from one of the standard mining directories (Coal Field Directory, published by the Keystone Consolidated Publishing Co., Pittsburgh, Pa.).

Rope haulage was reported by 1,066 mines, or 15 per cent of the total, representing a larger number of mines than in 1918, but a decrease of 2 in the percentage for the group as compared with all classes of mines. Electric haulage was reported by 3,274 mines (46.2 per cent), and the number of motors in use was 11,265. The percentage of mines in this class has not changed materially, but the actual number of mines has shown a gain of about 900 during the past four years.

Compressed-air locomotives have not increased either in actual or relative number, the percentage for the past year being but 1.2. The number of mines using storage-battery locomotives has increased from 3.6 per cent of the total shown four years ago to 9.8 per cent for last year, the latest figures showing 693 mines with 1,428 locomotives. A total of 405 gasoline locomotives was reported by 271 mines, the number of mines representing 3.8 per cent of the total, practically the same percentage as in previous years. Steam locomotives numbering 1,069 were reported in use at 528 mines and pits, which is 7.4 per cent of the total, a very slight decline from past years.

Coal was mined by hand in 3,332 mines, 47 per cent of the total number, indicating an increase in the number of mines in this group, although the percentage has not changed materially. Electric cutting machines, 17,875 in number, were reported for 3,607 mines, which is 50.9 per cent of all mines reporting. Compressed-air machines were employed in only 288 mines, or 4.1 per cent, and the number of machines in use was 2,159, both figures being smaller than those for previous years.

Stripping operations were shown for 146 mines and the number of shovels was tabulated as 72. While the former figure is perhaps too low, the latter figure has practically no value, because the descriptions of open-pit mines frequently failed to state the number of shovels in use.

The outstanding features of the statement, given herewith, are the figures showing the large number of electric motors and electric cutting machines that have been installed in coal mines, and simultaneously, the extent to which animal haulage and hand methods of mining still prevail.

*Reports of Investigations, U. S. Bureau of Mines.
†Statistician, U. S. Bureau of Mines.

HAULAGE SYSTEMS USED IN THE COAL MINES OF THE UNITED STATES

State	Total Mines Reporting	Animal	Rope	Compressed Air Mines	Compressed Air Locomotives	Storage Battery Mines	Storage Battery Locomotives	Gasoline Mines	Gasoline Locomotives	Steam Mines	Steam Locomotives	Electricity Mines	Electricity Locomotives
Alabama	214	182	67	7	30	6	23	9	13	32	38	51	145
Arkansas	57	49	22	..	..	1	1	3	3	11	11	8	9
Colorado	168	149	78	5	6	9	16	1	1	16	83	52	127
Illinois	379	311	17	1	1	60	252	13	22	6	6	222	952
Indiana	238	170	10	..	..	26	51	3	5	22	30	129	375
Iowa	116	106	34	..	..	3	3	3	5	8	9	23	42
Kansas	100	77	5	..	..	16	30	4	9	19	39	11	21
Kentucky	698	481	45	6	6	68	108	11	11	22	32	322	929
Maryland	79	66	16	..	..	1	1	4	4	5	6	29	59
Michigan	14	11	..	..	..	....	....	....	....	....	....	12	33
Missouri	88	68	4	1	1	5	6	3	4	16	25	8	12
Montana	37	30	13	..	..	1	1	1	1	1	2	23	35
New Mexico	28	20	16	..	..	1	1	2	2	2	2	10	23
North Dakota	59	53	6	..	..	....	....	7	7	5	6	5	7
Ohio	694	390	68	1	1	41	99	17	17	37	67	273	453
Oklahoma	116	97	43	1	1	6	7	4	4	20	21	24	28
Pennsylvania (bituminous)	1,925	1,364	353	29	63	153	289	88	166	84	110	893	3,061
Tennessee	136	105	27	4	4	8	8	19	30	19	23	43	130
Texas	50	46	9	..	..	1	3	4	4	5	5	4	4
Utah	27	25	12	..	..	4	5	....	....	1	1	16	72
Virginia	148	103	15	..	..	20	38	6	7	15	19	62	440
Washington	36	23	12	3	3	6	9	4	5	7	11	14	50
West Virginia	1,422	943	108	5	34	230	414	56	72	53	64	882	2,939
Wyoming	54	48	21	2	5	1	3	1	1	3	3	33	67
Total bituminous	6,883	4,917	1,001	65	155	667	1,368	263	393	409	613	3,149	10,013
Pennsylvania (anthracite)	205	147	65	19	57	26	60	8	12	119	456	125	1,252
Grand total, 1922	7,088	5,064	1,066	84	212	693	1,428	271	405	528	1,069	3,274	11,265
Grand total, 1920	6,286	4,587	946	99	255	469	903	241	337	529	964	2,735	99,855
Grand total, 1919	6,136	4,458	996	112	301	437	832	226	319	497	907	2,848	9,586
Grand total, 1918	4,947	3,035	844	91	387	180	349	215	336	478	1,017	2,352	9,184

MINING MACHINES USED IN THE COAL MINES OF THE UNITED STATES

State	Total Mines Reporting	Mines Using Hand Mining	Mining Machines — Electric — Mines	Mining Machines — Electric — Machines	Mining Machines — Compressed Air — Mines	Mining Machines — Compressed Air — Machines	Stripping — Mines	Stripping — Shovels
Alabama	214	156	51	187	13	113	8	1
Arkansas	57	40	14	49	....	....	5	2
Colorado	168	84	88	298	20	105	..	..
Illinois	379	169	209	2,262	15	110	1	1
Indiana	238	111	109	843	9	56	21	9
Iowa	116	71	45	98	1	1	..	..
Kansas	100	78	17	33	1	1	20	8
Kentucky	698	311	380	1,645	21	268	2	5
Maryland	79	64	16	29	....	....	..	..
Michigan	14	2	13	87	....	....	..	..
Missouri	88	47	35	125	....	....	13	9
Montana	37	12	27	91	4	15	..	..
New Mexico	28	21	17	54	1	4	..	..
North Dakota	59	43	14	25	1	1	7	3
Ohio	694	176	375	1,633	4	5	25	23
Oklahoma	116	61	45	223	2	17	7	..
Pennsylvania (bituminous)	1,925	943	959	5,452	124	1,053	19	9
Tennessee	136	92	40	158	12	93	..	..
Texas	50	45	7	12	1	1	..	..
Utah	27	8	20	172	....	....	..	..
Virginia	148	79	70	286	1	1	..	..
Washington	36	27	4	4	9	65	..	..
West Virginia	1,422	505	972	3,737	27	140	1	1
Wyoming	54	20	36	204	6	24	..	..
Total bituminous	6,883	3,165	3,563	17,707	272	2,073	129	71
Pennsylvania (anthracite)	205	167	44	168	16	86	17	1
Grand total, 1922	7,088	3,332	3,607	17,875	288	2,159	146	72
Grand total, 1920	6,286	3,188	2,897	15,827	341	2,947	47	65
Grand total, 1919	6,136	3,134	2,920	16,126	332	2,686	34	49
Grand total, 1918	4,947	2,348	2,146	13,033	402	4,126	65	124

Tenth Week of the Coal Strike

EDITORIAL REVIEW

ON THE surface there has been little change in the strike situation since the first of June and there is little evidence of any sub-surface movement looking to a settlement. There are about as many operators expressing their desire for a resumption of mining as there are miners longing to return to work, but among the many operators' organizations in the soft-coal field and from the United Mine Workers there comes no talk of peace.

One large operating interest in Ohio is reported to have appealed to Senator Pomerene for his assistance in getting the local miners' union to meet in a conference on wages. The Pittsburgh Coal Producers' Association last week addressed a letter to the president of District No. 5 asking for a conference on wages. In the absence of President Gibbons, Vice-President P. T. Fagan of the local union replied, refusing to confer and repeating the demand for a four-state agreement. Some observers look on this as a means of placing the miners on record prior to an attempt to operate some of the mines in the Pittsburgh district on a non-union basis.

The Geological Survey notes that the gain in production last week came in the Connellsville, eastern Kentucky, Tennessee and New River districts, in two of which the non-union miners had been on strike for some time. The Connellsville *Courier* of June 8 says that men are returning to work and that there will be a marked change in the situation before the first of July.

Intimidation as a weapon to keep down coal production is regularly resorted to by the union and its sympathizers. A gathering of strikers induced the workers in the Lansing mine, in Belmont County, Ohio, to quit work, although they were loading coal mined two years ago. Non-union workers in the Rosedale Coal Co.'s mine in Monongalia County, West Virginia, were subjected to a fusillade of shots which was only stopped by state police. One arrest has been made in Marion County as the result of threats made by a party of striking miners that the Hughes mine near Fairmont would be shot up if the non-union miners continue to work.

Eastern Ohio stripping mines continue to produce between 40,000 and 50,000 tons per week, although in some cases it has been necessary to obtain relief in the courts by way of injunction to prevent union miners from interfering with employees at these mines. An injunction was issued during the past week by Federal Judge Sater, of Columbus, restraining union miners from interfering with stripping operations in Harrison and Jefferson counties.

Here and there, as at the Kern Coal Co. wagon mine near Terre Haute, Ind., union miners are continuing at work in defiance of the union officials.

A board of conciliation has been granted the employees of the coal mines of Inverness County, Cape Breton, to examine into wage and working conditions, by the Department of Labor. The company interests have appointed Gordon G. Mitchell, of Halifax, as their representative, and Isaac MacDougall, of Inverness, has been named by the miners. The miners of Inverness applied for a conciliation board following a decrease in their wages.

Anthracite Operators Will Not Renew Wage Contract Without Reduction

ANTHRACITE miners have not published their reply to the operators' proposal for arbitration of their controversy as this is written, but unofficial reports substantiated by publication in President Kennedy's newspaper, *The Panther Creek News*, published in the anthracite region, confirm the belief that the miners are opposed to the arbitration plan, but that the miners will offer to continue negotiations on the basis of the present wage scale—that is, the one in the contract just expired. It is further suggested that the miners will offer to arbitrate the other demands, some nineteen in number, which have to do with matters other than the wage scale.

The scale committee of the miners took the arbitration proposal of the operators, outlined in *Coal Age* of last week, before a meeting of district officials of the union at Hazleton last week. The general scale committee gave out the following statement on Wednesday evening, June 7:

"The general scale committee met again today and prepared the official answer to be made to the representatives of the anthracite operators regarding their proposal for arbitration. The committee can only say that the operators' offer has been rejected, and our position will be fully explained when we meet with the operators at our next conference."

Samuel D. Warriner, spokesman for the anthracite operators, made the following statement on Tuesday, June 13:

"Reports to the effect that anthracite operators are contemplating or even considering a renewal of the wage contract in effect up to April 1 are absolutely without foundation. I can only regard these reports as indicating a desire to spread the belief that the wages paid up to April 1 can be maintained. This, as we have repeatedly pointed out, is out of the question.

"The operators are firm in the position they have taken that unless the men are willing to consider our proposal for a decrease in wages the only alternative is the appointment by the President of a tribunal 'To ascertain and consider all the facts and determine the question concerning wages and conditions of employment at issue between us.'"

Indiana Operators May Take Legal Action Based on Decision in Coronado Case

OPERATORS in Indiana in several instances recently have refused, it is said, to continue checking off dues of union engineers and firemen kept at work at the mines now idle by strike, asserting they had no contract with the miners calling for such action. The union has instructed these men to leave their places and permit the mines to flood.

Information from Clinton is to the effect that in some cases the operators expect to stand pat in their refusal to continue the check-off system and in the event the enginemen are taken off the jobs and damage to the mines results, action will be brought against the mine workers' organization under the decision of the U. S. Supreme Court a few days ago which holds labor organizations responsible for the actions of its individual members.

Trouble at the Deep Vein and Graff mines, west of Terre Haute, occurred June 8, due to reports at employment of non-union men. The Vigo County sheriff's forces were called to the mines. The trouble at the Deep Vein apparently had been settled, for no miners were to be found. The deputy sheriffs found about 100 miners at the Graff mine protesting against resumption of work before settlement between the operators and the United Mine Workers of America. John Hessler, president of District No. 11, U. M. W. A., is in Kentucky and the miners' headquarters would make no comment on the situation.

5,000 *Miners in Central Pennsylvania Resume Work During Latter Half of May*

THE semi-monthly Johnstown district report of the Pennsylvania State Employment Bureau for the two-week period ending June 1 says: "There has been a little change for the better in the mining situation throughout the six counties assigned to this district since our last report. From authentic sources in our report of two weeks ago we stated there were 65,000 miners idle on account of the coal strike throughout this territory, but we now find that about

5,000 have returned to work. Our prediction is that there will be no permanent settlement made until after July 1, but we expect a great many more men to go back to work in June, especially in those fields that have always been non-union."

The Pittsburgh office reported that few miners had applied for employment. The New Kensington report shows that no skilled miners had applied for work in non-union mines, but that there had been a few calls for such workmen.

"The situation throughout the coal mines in our district," the McKeesport office reported, "is about the same as it was two weeks ago. We have a few miners coming to our office for outside labor work."

Several Connellsville Mines Are Now Operating on a Normal Basis

GAIN in output in the Connellsville coke region continues slowly but surely in spite of two large miners' mass meetings during the last week and other efforts in the way of talk and intimidation on the part of the strikers and United Mine Workers' organizers.

The Standard plant of the H. C. Frick Coke Co., one of its two large plants in Westmoreland County, having 901 ovens, and the last of their plants to be affected by the strike, was reduced to eleven miners the first of last week, but has now recovered to the extent that it is operating about 60 per cent of normal. The Leisinring No. 2 plant is up to 90 per cent. The Bridgeport mine, near Brownsville, resumed operations Tuesday, June 6, and has since been shipping three cars of coal a day. The Frick operations as a whole have more than 300 more miners at work than a week ago.

The Hillman Coal & Coke Co. has resumed operations at the Griffin No. 2, Isabella and Tower Hill No. 2 plants, shipping a car or two daily from each plant. The Crystal plant is working at normal and the Warwick plant of the Diamond Coal & Coke Co., a subsidiary of the Hillman Company, also is at 100 per cent. The Pittsburgh Steel Co. has fired 100 of the 400 ovens at its Alicia No. 1 plant, near Brownsville, and is getting enough coal from its two mines to keep them going.

At the Linn plant the American Coke Corporation has increased output to three cars a day, as compared to two cars a day last week. The Republic Iron & Steel Co. has increased 50 per cent at the Bowood plant, started last week. The Mather Collieries Co. is working on 100 per cent basis and the Crucible Company at 80 per cent.

A couple days ago at the plant of the Taylor Coal & Coke Co. at Searight one of the strikers fired a shot at one of the men working at the boilers, slightly injuring him. The man who did the shooting was arrested.

Utah Still Turbulent; Operators Assure Governor There Will Be No Profiteering

AS A result of the holding up of stages and the firing at mine trains by strikers in the Carbon County coal fields of Utah during the past week, the National Guard has once more been ordered by Governor Mabey to hold itself ready to go to the scene of trouble at a moment's notice. A few arrests have been made but all is quiet again and it seems probable that the soldiers will be dismissed a second time without moving against the strikers. The foreigners who were ordered to turn in their arms are still holding their weapons and are likely to continue to do so, regardless of the fact that it is well known that they are breaking a state law.

In a recent conference between leading coal operators of the state and Governor Mabey the former agreed to pay retroactive to April 1 any scale of wages that may be agreed upon in the states where unions are in control in the coal fields. The committee assured the Governor that the operators would live strictly up to the Hoover levels as to the price of coal and that there would be no profiteering. What effect this agreement as to the wage scale will have on the disposition of the National Guard units is not yet known.

Court Awards $330,000 Damages Against Tidewater Exchange Debtor Members

DECISIONS granting awards amounting to more than $330,000 against five debtor members of the old Tidewater Coal Exchange were handed down by Judge Learned Hand, of the Federal Court for the Southern District of New York, last week. The suits were brought by Major W. R. Coyle, as trustee of the exchange, and it is believed that the awards granted indicate the outcome of other suits aggregating about $1,000,000 brought against other debtor members.

The coal firms whom the Court decides against and the amounts of the awards are: Archibald McNeil & Sons Co., $198,000; Johnstown Coal & Coke Co., $17,000; New York & Philadelphia Coal & Coke Co., $11,509.62; West Virginia & Pennsylvania Coal Co., $72,000, and Morrisdale Coal Co., $34,000. James F. Curtis and Chauncey Belknap appeared as counsel for Major Coyle in the suits.

Judge Hand in the McNeil case finds that under the rules of the exchange the coal did lose its separate ownership when it arrived, but obviously it did not lose its traceable identity in fact. The result of the consignment was to transfer property in those cars to the pool members in common. The transaction was like a sale to the pool members as a whole. The Court's ruling, in part, was as follows:

Under the order of Jan. 14, 1918, every such sale was conditional upon any subsequent confiscation, which when it occurred defeated the title so acquired and made it as though the coal had been seized before title passed. In the case of coal in a pile the actual confusion would have prevented anyone from saying whose was taken, and the order would *de facto* be inoperative, but there was no confusion as things were, only an agreement by which the interest in those ascertainable cars passed from the defendant to the members of the pool. The order, if valid, must operate where it can; its limitations were only in execution.

Moreover it is significant that the parties treated the transactions in this way without dissent. The defendant collected from the "divertees" of the coal and did not offer to restore to the pool the compensation; nor did they claim till this action was brought that their credit in the pool remained untouched. The validity of the order, which was not retroactive, is not challenged, and being valid, its effect was to undo any transaction entered into between the consignor and anyone else. I find, therefore, that the defendant is not entitled to credit for the coal so seized, but must pay upon its overdrafts as settled without it.

There is, of course, hardship in this, but I cannot see why the creditors at large should bear it. Clearly they got no benefit from those shipments, and while the risk of the losses might indeed be justly borne by all, their position is the same as any buyer's who, having bought coal, had it confiscated. Therefore, I decline to allow this credit.

The second point is of the credits bought within the four months period prescribed under Section 68 (b) of the Bankruptcy Act. It is proved that these were purchased "with a view" to use them as set-offs and it is conceded that the exchange was then insolvent. The point therefore turns on notice of insolvency and depends upon the evidence.

It must be remembered that the exchange was an association wholly without capital and that therefore it could under no circumstances pay its claims in full unless all the debts were paid without any deduction. For every debt outstanding there was a precisely equivalent credit, not only in the amount of tonnage but in price. The insolvency of a single debtor therefore made it impossible for the exchange as a whole to be solvent. Indeed the hazard of insolvency went even deeper than this. The railroads had agreed to pay the "expenses of the Tidewater Coal Exchange incurred by or under the direction of the commissioner, to be arrived at in accordance with Rule 17" (later Rule 35) "of the Exchange." The railroads withdrew their "support" on April 30, 1920, and perhaps had the right to do so whenever they chose. Whether they had or not, it cannot be argued that they are liable for the expenses of collecting the accounts of delinquent members. They arise from the refusal of some members to pay their debts, and the railroads cannot be supposed to have guaranteed part of the members, *i.e.*, the creditors, against the rest, *i.e.*, the debtors, in their mutual dealings.

Therefore, it certainly follows in view of the confusion and refusals to pay which had occurred before Jan. 12, 1921, that the exchange would be obliged to pay substantial charges which could only come out of its collections. At least by Jan. 12, 1921, if every debtor in the end proved solvent and could be forced to pay in full, it would only be after extended litigation and there could not possibly be a dividend of one hundred per cent on the claims. That being so, what on Jan. 12, 1921, and thereafter was the "fair valuation" of the exchange's assets under Section 1 (15) of the Bankruptcy Act? What is the fair value of a claim known to be subject to doubtful and extended litigation? Obviously it is less than its face under any method of appraisal. Perhaps the exchange might have been solvent on July 1, 1920, if all the debtors were sound and all were tractable, but by Jan. 12, 1921, everyone knew that the second condition was quite the reverse of true. Any debtor who bought a credit for a set-off was therefore sure to get upon it more than any other creditor could get, and if he had reflected must have seen that he would. That is what the law forbids.

All this was reflected in what I may fairly call the "going price" for credits, which when the defendant bought was not more than 50 per cent of their face. Of course, if the claims were valid, such a discount could not be accounted for merely by the delays incident to collection. It is argued, however, that their validity was in dispute, and this is true. Yet no one disputed that the debtor members were in some form and to some amount

responsible for the coal they got. If the values actually fixed were too high, both credits and debits would be proportionately reduced.

Finally, it appears that the defendant knew that at least one of the debtor members was insolvent, and there were rumors about that several others were in doubtful condition. One may allow that a part of the discount was due to the uncertainty of what the final value of claims would be when allowed, and to the delay in their collection, but the whole situation was enough to put any reasonable man on notice of the truth, which was that under no circumstances could the exchange pay in full. Therefore, I hold that the set-offs are invalid under the Bankruptcy Act, and that the defendant can avail itself of them only as a creditor.

A. G. Hays Asks $35,000 Damages of Vinton Colliery Co.; Coal Police Indicted

ARTHUR G. HAYS, New York attorney, who went to the Pennsylvania coal fields last month as a representative of the American Liberties Union, filed suit in Supreme Court June 9 for $35,000 against the Vinton Colliery Co., of Vintondale, Pa.

Mr. Hays alleged that while standing on a street in Vintondale May 27 he was assaulted and "with undue force and brutality" dragged from the sidewalk into an automobile "by agents and employees of the colliery company." He named Lloyd I. Arbogast, secretary and a director of the company; John Butalla, Richard Esaias, Harry McArdle and James Dempsey, agents and alleged special police employed by the company. He asked $15,000 damages for this action, $15,000 for his subsequent arrest on a charge of trespass when he attempted to serve five warrants of arrest on Arbogast and the four guards and $5,000 for a later arraignment.

Indictments charging assault and battery were returned June 9 at Ebensburg, Pa., against Mr. Arbogast and the four coal and iron police mentioned.

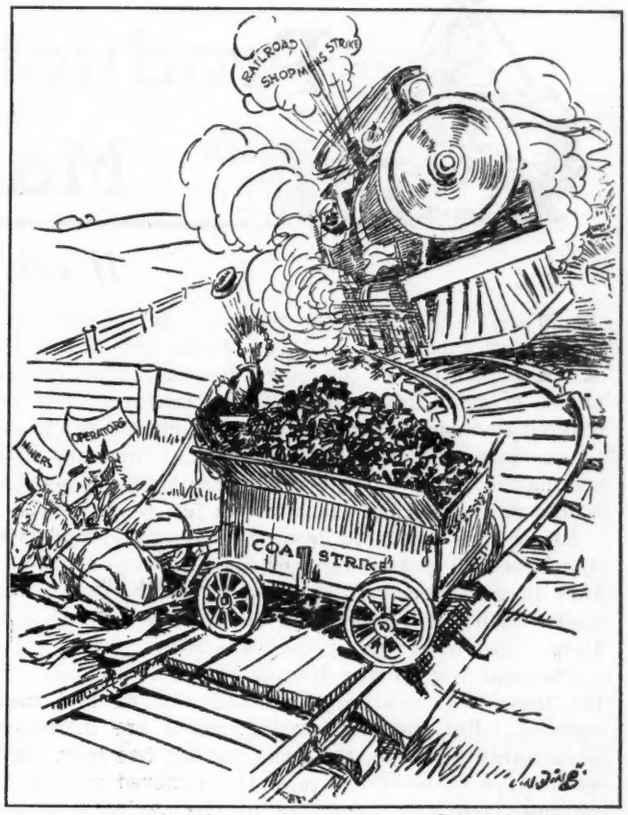
No Difficulty for Utilities If Non-Union Operators Observe Contracts

GEORGE H. ELLIOTT is in Washington to co-operate with the Secretary of Commerce during the coal emergency which has been caused by the continuance of the strike. Mr. Elliott has pointed out to Secretary Hoover that the gas and electric companies are not in dire straits. They not only laid in stocks in anticipation of the strike but fully protected their requirements by making contracts with mines in the non-union fields. Mr. Elliott has assured Secretary Hoover that the gas and electric companies will have no difficulties if they can get coal on their contracts. He called attention to the fact, however, that difficulties were brought about in the strike two years ago because many of the operators could not resist the temptation to sell their coal for the higher spot price, thereby making it impossible for them to furnish all the coal called for on their lower-priced contracts.

No steps have been taken by the public utilities to unify their purchases of coal due to the inherent difficulties of such action. There is such diversity in the kinds of coal required by the public utilities that unified buying would be a very complicated process. The situation will have to become much more acute than it is at present, it is believed, before the utilities will attempt to pool their buying with a central committee.

Expect Bunker Differential to Be Upheld

IT IS expected that the Interstate Commerce Commission will allow the present differential on coal for bunker purposes to continue. Following investigation of the bunker rates and their relation to rates for coal for local delivery in port, an examiner for the commission has recommended that the commission hold that the railroads have justified the propriety of the application of the rates on coal for transshipment to vessels for bunker purposes. He recommends that it be held that such rates, which are lower than the rates on similar coal for local delivery, do not violate the fourth section of the Commerce Act.



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DANGEROUS CROSSING; LOOK OUT FOR THE CARS!

Destination of Lake Cargo Coal Shipped During Season to End of April

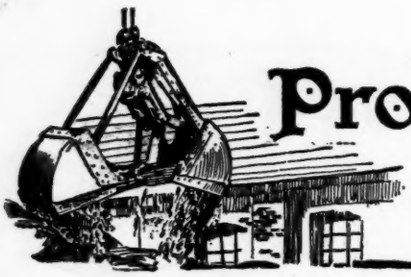
NOTABLE features of the present lake season have been a decrease in the quantity shipped to Lake Superior destinations, both American and Canadian, and the extraordinary increase in the tonnage for southern Lake Michigan and for Lake Erie. Whereas in the corresponding period of 1921 no coal moved to Lake Erie points, in 1922 about 109,000 tons has been shipped through to Buffalo for use of the coke and steel plants there.

A summary of the destination of dumpings during the present season up to April 30, with comparable figures for 1921 and 1920, is given in the subjoined table, compiled by the U. S. Geological Survey:

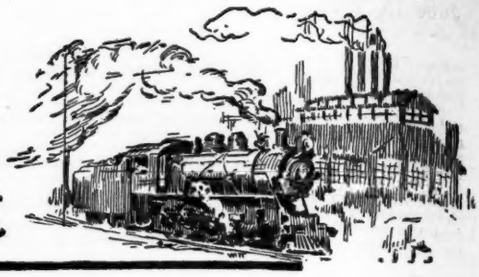
DESTINATION OF CARGO COAL DUMPED AT LAKE ERIE PORTS FROM OPENING OF SEASON TO APRIL 30. (a)

	1920		1921		1922	
Destination	Net Tons	Per Cent	Net Tons	Per Cent	Net Tons	Per Cent
American						
Lake Superior ports	84,000	27.9	387,000	36.8	149,000	20.0
Sault Ste. Marie and river points	21,000	7.0	15,000	1.3	22,000	3.0
Lake Huron-Georgian Bay ports	30,000	9.9	18,000	1.7	21,000	2.9
Lake Michigan ports	76,000	25.1	344,000	32.7	328,000	44.4
Port Huron and Detroit River	44,000	14.6	26,000	2.5	13,000	1.7
Lake Erie ports	1,000	0.3	.....	.....	109,000	14.9
Total American	256,000	84.8	790,000	75.0	642,000	86.9
Canadian						
Lake Superior ports	.....	.....	184,000	17.5	5,000	0.7
Sault Ste. Marie and river points	8,000	2.6	6,000	0.0	7,000	0.9
Lake Huron-Georgian Bay ports	12,000	3.9	19,000	1.8	24,000	3.3
Port Huron and Detroit River	10,000	3.5	20,000	1.9	29,000	3.9
Lake Erie ports	.....	.....	3,000	0.3	7,000	1.0
Lake Ontario and St. Lawrence River	16,000	5.2	29,000	2.9	24,000	3.3
Total Canadian	46,000	15.2	261,000	25.0	96,000	13.1
Grand total	302,000	100.0	1,051,000	100.0	738,000	100.0

(a) Statistics furnished by courtesy of Ore & Coal Exchange.



Production and the Market



Weekly Review

HESITANCY on the part of coal buyers, so noticeable two or three weeks ago at the inauguration of Secretary Hoover's price conferences, is fast disappearing. The consumer has reentered the market, largely in the belief that prices are to be kept within certain bounds. There is little speculation going on in coal and the trade as a whole is in a much healthier state than a few weeks ago.

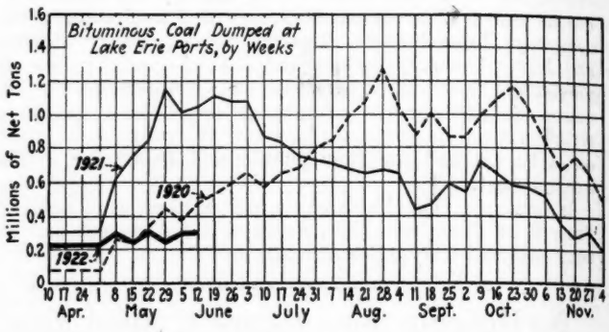
Prices have recovered from their recent slump. *Coal Age* Index of spot bituminous prices stands at 284 on June 12, an increase of 29 points as compared with last week's figure, and represents an average spot price of $3.44. Last week this average was $3.08.

The real test of the Hoover prices is coming. So far they have not been exceeded and in few cases equalled. But industrial requirements are increasing as business picks up, the Lake market has been backward—if a normal tonnage is to be moved it must be crammed into the remainder of the navigable season this year—stocks are everywhere going down and many consumers are undoubtedly "laying off" replenishing until they can obtain cheaper transportation after July 1. If these conditions bring on the expected degree of increased demand the good intentions of operators to hold to the Hoover prices will be put to a severe test.

Hampton Roads Prices Near Agreed Maximum

Hampton Roads prices have survived the avalanche of fuel destined to the piers in the last ten days. At one time there was nearly 600,000 tons on hand and en route to the Roads, which, because of the inactive New England and foreign markets, had to be absorbed by the bunker trade and Baltimore, New York and Philadelphia centers. These three coastwise ports received an unusually heavy tonnage and in the face of the easy movement of Southern coals quotations have strengthened to around $6.50 f.o.b. Hampton Roads, an increase of at least 50c. and close to the agreed maximum figure of $3.50 per net ton at the mines.

In the Midwest the demand is increasing daily, although it is confined for the most part to the larger users, who are again safeguarding their reserve piles. The railroad pool is active and there also are some roads buying in the market outside the pool for reserve tonnage. Western Kentucky operators could not agree with Mr. Hoover on their prices and are now selling their coal strong around $4.15. It is not likely

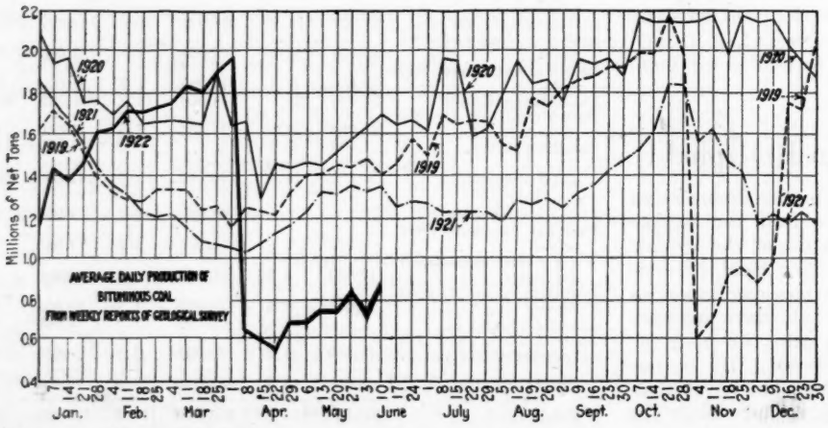


to go much higher at an early date, however, as eastern Kentucky is selling competitively in many markets at the $3.50 maximum.

Connellsville producers also are enjoying a fancy market. The steel interests and other large users have bid up spot prices to $3.75@$4. Alabama coal is widening its distribution area, emergency freight rates to Western and Northern points normally served by fields now on strike having enabled operators to increase their output, although prices are within the limits recommended at the Washington conference.

Production is slowly gaining way. During the tenth week of the strike approximately 5,000,000 tons were produced, the increase apparently coming from Connellsville, eastern Kentucky, Tennessee and New River. The increased output, however, is not sufficient to stop the steady drain on consumers' stock piles.

Retail demand for anthracite is picking up and



Estimates of Production

(Net Tons)

BITUMINOUS

Week ended:	1922	1921
May 20 (*b*)	4,481,000	7,989,000
May 27 (*b*)	4,889,000	8,166,000
June 3(*a*)	4,623,000	6,835,000
Daily average	771,000	1,330,000
Calendar year	167,121,000	165,541,000
Daily av. cal. yr.	1,280,000	1,270,000

ANTHRACITE

May 20	8,000	1,794,000
May 27	9,000	1,988,000
June 3 (*a*)	8,000	1,573,000

COKE

May 27 (*b*)	97,000	68,000
June 3 (*a*)	97,000	61,000
Calendar year	2,787,000	3,191,000

(*a*) Subject to revision. (*b*) Revised from last report.

many consumers are placing orders to be filled after the strike is settled. The retail yards are nearly out of the more popular domestic sizes. Steam trade is good on buckwheat No. 1, the only storage grade obtainable, and there is an active market also for the river coals.

BITUMINOUS

"Recovering from the holiday depression, the production of soft coal in the tenth week of the strike is expected to pass 5,000,000 tons," says the Geological Survey.

"In the ninth week of the strike (May 29-June 3) the combined effect of the Memorial Day holiday and of a pay day reduced production of bituminous coal to 4,623,000 tons. The output of anthracite was barely 8,000 tons, and the total quantity of all coal raised was 4,631,000 tons. A year ago production, including anthractie, was 8,400,000 tons; in the year before that, 11,100,000 tons, yet in neither of the years preceding was the output at this season normal, for in 1921 the business depression was at its most acute stage, and in 1920 the market demanded more coal than could be delivered.

"On Monday of last week (June 5-10) loadings were only 14,576 cars, but since then a steady increase has been reported. On Wednesday loadings passed the 16,000-car mark for the first time since the strike began, and on Thursday, June 8, another high record of 16,289 cars was set. The present indications are that the tenth week will exceed the eighth by at least 4 per cent, suggesting an output above 5,000,000 tons.

	First Week	Fifth Week	Sixth Week	Seventh Week	Eighth Week	Ninth Week	Tenth Week
Monday	11,445	11,598	13,118	13,366	14,772	15,082	14,576
Tuesday	11,019	12,160	13,266	12,830	15,085	11,142	15,115
Wednesday	11,437	12,861	13,445	13,422	14,677	15,097	16,005
Thursday	11,090	12,487	13,266	13,445	14,573	13,823	16,289
Friday	11,296	12,778	13,727	14,036	15,202	14,843	.....
Saturday	8,888	11,265	11,454	12,357	12,662	12,865	.....

"The largest elements in the increase revealed by the detailed returns of loadings on each railroad division appear to be heavier shipments from the Connellsville region, from eastern Kentucky and Tennessee, and from New River district. Other factors in the larger tonnage are the quickening of demand and consequently of shipments in the fields of the West which are now at work."

Receipts at the Head-of-the-Lakes docks have been very light, much of the coal dumped at the lower ports going to Buffalo. Duluth-Superior Harbor has received only 129,140 tons this year, as compared with 1,669,092 tons in the corresponding period of 1921 and 296,333 tons in 1920. Lake dumpings during the week ended June 12 were 293,405 net tons—283,821 tons cargo and 9,584 tons vessel fuel as compared with 300,312 tons in the week preceding. Dumpings for the season to date are 2,651,047 tons; in 1921 they were 6,903,274 tons. Prices are up at the Head-of-the-Lakes docks, demand is increasing and a serious condition may arise with any rush for coal, as dock stocks are much in need of replenishment.

All-rail movement to New England has been a trifle heavier during the last two weeks, showing the effects of heavier production. Coastwise freights are so low, however, that Southern coals will continue to dominate New England to the extent that they are available.

Hampton Roads dumpings were the heaviest of the year during the week ended June 8. A total of 472,300 net tons was dumped, as compared with 393,062 tons in the preceding week. New England is taking little but contract

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 inclusive	April 3 to May 27, 1922 inclusive	Week Ended May 27
U. S. total	45.6	55.7	....	....
Non-Union				
Alabama	63.5	64.6	73.6	78.4
Somerset County	55.5	74.9	48.0	17.1
Panhandle, W. Va.	55.3	51.3	39.2	43.4
Westmoreland	54.9	58.8	78.8	75.8
Virginia	54.8	59.9	76.5	88.4
Harlan	53.3	54.8	50.1	60.5
Hazard	51.7	58.4	59.4	71.4
Pocahontas	49.8	60.0	74.9	75.0
Tug River	48.1	63.7	80.8	88.1
Logan	47.6	61.1	75.8	81.6
Cumberland-Piedmont	46.6	50.6	15.2	24.7
Winding Gulf	45.7	64.3	70.3	80.2
Kenova-Thacker	38.2	54.3	78.7	87.3
N. E. Kentucky	32.9	47.7	59.7	68.5
New River‡	24.3	37.9	14.8	34.3
Union				
Oklahoma	63.9	59.6	14.4	12.0
Iowa	57.4	78.4	0.0	0.0
Ohio, Eastern	52.6	46.6	0.0	0.0
Missouri	50.7	66.8	0.5	2.0
Illinois	44.8	54.5	0.0	0.0
Kansas	42.0	54.9	11.1	14.0
Indiana	41.4	53.8	0.0	0.0
Pittsburgh†	41.2	39.8	0.0	0.0
Central Pennsylvania	39.1	50.2	11.3	11.1
Fairmont	35.3	44.0	4.7	5.5
Western Kentucky	32.5	37.7	53.9	76.1
Pittsburgh*	30.4	31.9	0.0	0.0
Kanawha	26.0	13.0	2.4	6.1
Ohio, southern	22.9	24.3	0.0	0.0

* Rail and river mines combined.
† Rail mines.
‡ Union in 1921, non-union in 1922.

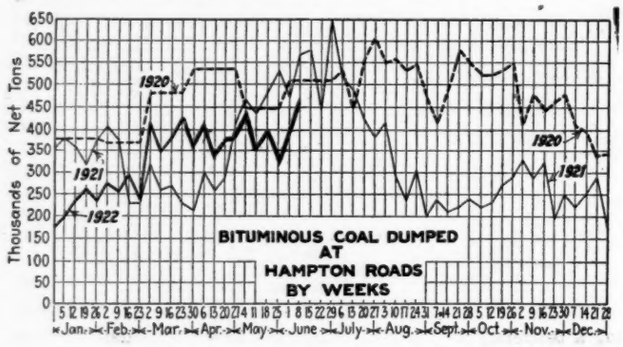
Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	May15, 1922	May29, 1922	June5, 1922	June 12, 1922†
Smokeless lump	Columbus	$2.85	$3.55	$3.35	$3.75
Smokeless mine run	Columbus	2.90	3.40	3.00	3.50
Smokeless screenings	Columbus	2.90	3.25	2.85	3.00@ 3.40
Smokeless lump	Chicago	2.90	3.40	3.10	3.50@ 3.75
Smokeless mine run	Chicago	2.70	3.15	2.85	3.25@ 3.50
Smokeless lump	Cincinnati	3.25	3.40	3.40	3.50@ 3.75
Smokeless mine run	Cincinnati	2.90	3.15	2.85	3.25@ 3.50
Smokeless screenings	Cincinnati	2.75	3.00	2.75	3.00
*Smokeless mine run	Boston	6.75	6.15	6.05	6.25@ 6.50
Clearfield mine run	Boston	3.25	3.15	3.20	3.00@ 3.50
Cambria mine run	Boston	3.75	3.65	3.65	3.50@ 4.00
Somerset mine run	Boston	3.50	3.40	3.15	3.00@ 3.50
Pool 1 (Navy Standard)	New York	....	....	4.40	.....
Pool 1 (Navy Standard)	Philadelphia	3.95	....	....	.....
Pool 1 (Navy Standard)	Baltimore	4.00	....	....	.....
Pool 9 (Super.Low Vol.)	New York	4.00	3.80	3.90	3.90@ 4.10
Pool 9 (Super.Low Vol.)	Philadelphia	3.75	3.60	3.90	3.90@ 4.15
Pool 9 (Super.Low Vol.)	Baltimore	4.00	3.25	3.40	4.00@ 4.50
Pool 10 (H.Gr.Low Vol)	New York	3.75	3.60	3.75	3.90@ 4.10
Pool 10 (H.Gr.Low Vol.)	Philadelphia	3.60	3.25	3.70	3.50@ 4.00
Pool 10 (H.Gr.Low Vol.)	Baltimore	3.75	3.25	3.35	3.50@ 4.00
Pool 11 (Low Vol.)	New York	3.65	3.25	3.60	3.90@ 4.10
Pool 11 (Low Vol.)	Philadelphia	....	2.75	3.25	3.25@ 3.75
Pool 11 (Low Vol.)	Baltimore	3.50	3.05	3.15	3.50@ 4.00
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	....	3.10	3.65	4.00
Pool 54-64 (Gas and St.)	Philadelphia	....	2.75	....	.....
Pool 54-64 (Gas and St.)	Baltimore	....	3.00	3.25	3.75@ 3.85
Kanawha lump	Columbus	3.15	3.45	3.15	3.50@ 3.75
Kanawha mine run	Columbus	3.00	3.25	2.85	3.25@ 3.50
Kanawha screenings	Columbus	2.95	3.10	2.65	3.00@ 3.25
W. Va. split lump	Cincinnati	3.10	3.40	3.25	3.50
W. Va. Gas lump	Cincinnati	3.00	3.30	3.25	3.50
W. Va. mine run	Cincinnati	3.00	3.10	2.75	3.00@ 3.50
W. Va. screenings	Cincinnati	2.90	3.10	2.60	3.00@ 3.25
Hocking mine run	Columbus	$3.15	$3.60	$3.10	$3.50@$3.75
Hocking lump	Columbus	2.90	3.55	3.00	3.25@ 3.50
Hocking screenings	Columbus	2.85	3.55	2.85	3.00@ 3.25
Pitts. No. 8 lump	Cleveland	3.25	....	....	4.00
Pitts. No. 8 mine run	Cleveland	3.25	3.25	....	3.60@ 3.75
Pitts. No. 8 screenings	Cleveland	3.25	3.25	....	3.60@ 3.75
Midwest					
Franklin, Ill. lump	Chicago	3.95	....	....	.....
Franklin, Ill. mine run	Chicago	3.95	....	....	.....
Franklin, Ill. screenings	Chicago	4.15	....	....	.....
West Ky. lump	Louisville	3.15	3.20	3.30	3.75
West Ky. mine run	Louisville	3.15	3.20	3.30	3.75
West Ky. screenings	Louisville	3.15	3.20	3.30	3.75
West Ky. lump	Chicago	....	3.10	3.40	4.15
West Ky. mine run	Chicago	....	3.10	3.40	3.75@ 4.15
South and Southwest					
Big Seam lump	Birmingham	2.00	2.00	2.20	2.15@ 2.25
Big Seam mine run	Birmingham	1.70	1.70	1.70	1.75@ 2.00
Big Seam (washed)	Birmingham	1.95	1.85	1.85	1.75@ 2.00
S. E. Ky. lump	Chicago	....	3.10	3.10	3.75
S. E. Ky. mine run	Chicago	....	3.10	3.10	3.50
S. E. Ky. lump	Louisville	3.15	3.10	2.85	3.75
S. E. Ky. mine run	Louisville	3.00	3.10	2.85	3.50
S. E. Ky. screenings	Louisville	3.00	3.10	2.85	3.25
S. E. Ky. lump	Cincinnati	3.00	3.30	3.25	3.50
S. E. Ky. mine run	Cincinnati	3.00	3.15	2.80	3.25@ 3.50
S. E. Ky. screenings	Cincinnati	3.00	3.15	2.75	3.00@ 3.25
Kansas lump	Kansas City	4.25	4.25	4.25	5.00
Kansas mine run	Kansas City	4.15	4.20	4.20	4.00@ 4.50
Kansas screenings	Kansas City	2.65	2.75	2.75	2.85

*Gross tons, f. o. b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.
NOTE—Smokeless prices now include New River and Pocahontas.

tonnage and the bulk of the spot coal is going to New York, Baltimore and Philadelphia, at prices which figure close to the $3.50 maximum at the mines.

Tidewater dumpings for May were curtailed by the strike,



with the exception of Hampton Roads, which exceeded the April figure by 133,000 tons.

TIDEWATER SHIPMENTS FOR MAY, 1922
(In Thousands of Net Tons)

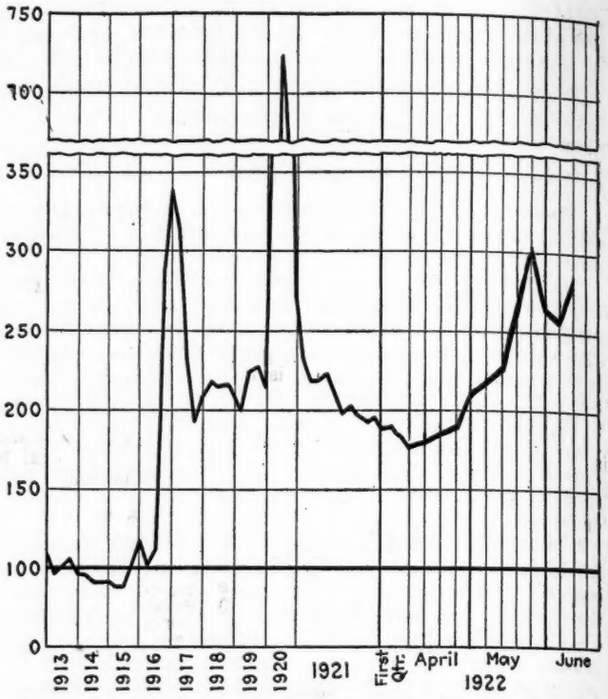
Destination	New York	Phila-delphia	Balti-more	Hampton Roads	Charles-ton	May Total	Apr i Total
Coastwise to New England	16	7	...	768	16	807	873
Exports	...	10	...	140	7	157	302
Bunker	113	15	12	197	7	344	453
Inside capes	...	52	31	125	..	208	240
Other tonnage	135	...	...	493	..	628	675
Total, May	264	84	43	1,723	30	2,144	.....
Total, April	643	176	102	1,590	32	.....	2,543

COKE

Production of beehive coke was 97,000 net tons during the week ended June 3, being curtailed by the Memorial Day holiday. The decrease centered in the Connellsville region. Heavier production is expected to follow an increasing number of plants in blast. There is some Eastern buying of Connellsville coke, but the furnace demand is nearly as light as the supply, as the price of spot coke would not justify operations.

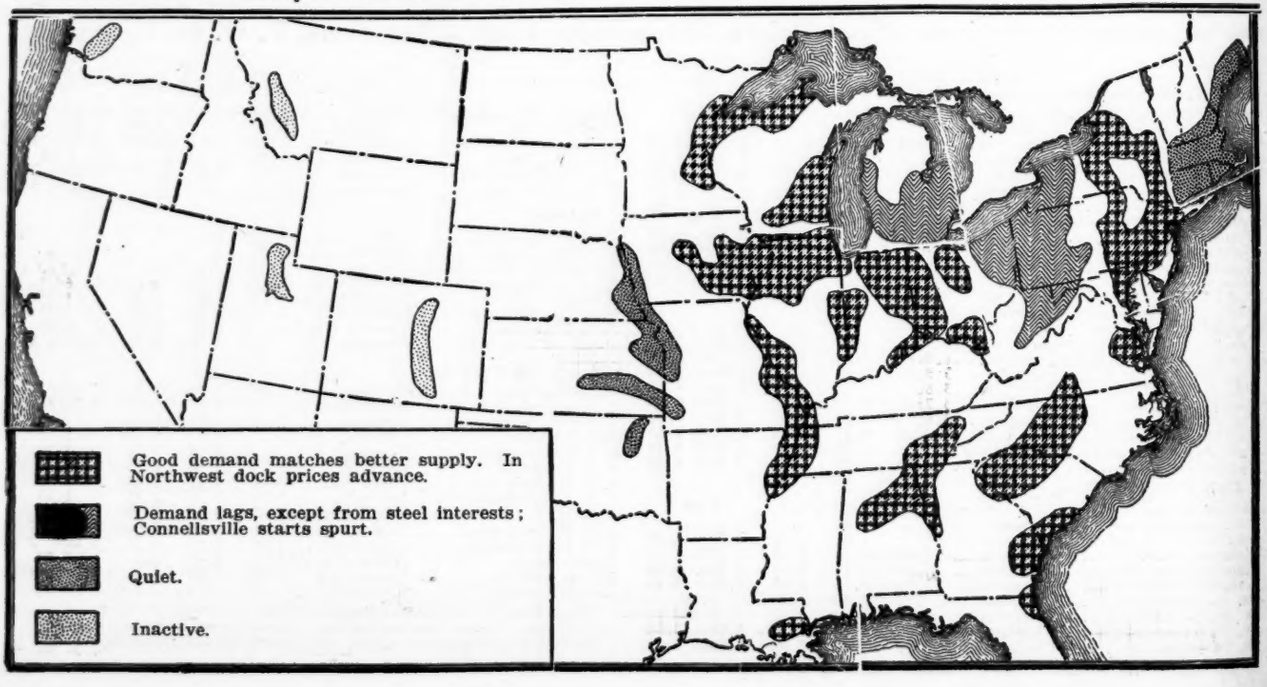
ANTHRACITE

Production of anthracite is still confined to approximately 8,000 net tons per week, this output being steam sizes dredged from the rivers. Producers continue to ship from their storage yards, but the movement is declining, as little but pea and buckwheat No. 1 remain unsold. In a few cases the smaller steam sizes are being held for old customers. The retail trade is a little more lively. Yards stocks are fast being depleted and orders are generally being taken for shipment after the strike.



Coal Age Index 284, Week of June 12, 1922. Average spot price for same period $3.44. This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted, in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District, Illinois and Indiana prices not included in figures for last week.)

Relative Activity of Markets for Bituminous Coal at End of Tenth Week of Strike


Good demand matches better supply. In Northwest dock prices advance.
Demand lags, except from steel interests; Connellsville starts spurt.
Quiet.
Inactive.

Foreign Market And Export News

British Production Declines Sharply; Market Is Quiet, but Good Orders Are in Sight

BRITISH production during the week ended May 27 was 4,630,000 gross tons as cabled to *Coal Age*. This is a sharp decline from the preceding week's output of 4,804,000 tons.

The market in the north of England is quieter than it has been for some weeks past. Inquiries are not frequent although the pits will be fully occupied for the greater part of June. The two most promising sources of inquiry are America and Germany, though very little has yet been shipped. Among the recent orders actually booked are 4,000 tons of special Wear gas coals at 29s. c.i.f. for the Bordeaux gasworks. Other small orders are for France and Italy.

In the Scottish market conditions are brighter. Scottish pits will supply 75,000 tons to the Danish State Railways at a price around 32s. f.o.b.

The Welsh market is unusually quiet. This inactivity is credited to the action of the buyers who are said to be withholding definite orders with the view of forcing down prices. There is still some considerable quantity of coal available, and this is due largely to the increase in output from the Welsh pits rather than to any slackening of the export trade.

While it is true that there are individual cases of hardship and privation among employed miners, and that some districts are feeling the pinch more than others, it is an exaggeration to say, as the miners' leaders maintain, that the entire mining community is in the depths of poverty. In terms of hard cash no marked disparity exists between the average miner's earnings and the cost of living scale. The average for all pit workers, skilled and unskilled men and boys, in 1914 was £6 10s. 11¼d. Last March this average was £11 16s. 10d., which roughly equals the increase of 80 per cent in living.

Year's Record at Hampton Roads

Dumpings reached 472,000 net tons last week, the heaviest of the year. At the end of the week the piers were taking on increased business, with indications of still further increase.

Prices cover a wide range, with rapid fluctuations making it difficult to establish a fixed scale. Larger supplies of high-volatile coals was one of the features of the market.

The market is showing a tendency upward. Spot coal has taken control of the situation.

British Exports, April, 1920, 1921, 1922

Country	Gross Tons 1920	1921	1922
Russia	2,379	.....	2,358
Sweden	76,034	19,223	196,255
Norway	54,711	16,471	154,810
Denmark	79,818	48,000	167,707
Germany	.....	8,700	256,618
Netherlands	.....	39,096	303,267
Belgium	89,810	5,823	221,563
France	953,809	119,285	955,346
Portugal	13,200	12,539	79,989
Azores & Madeira	27,649	.....	14,853
Spain	8,088	31,268	147,083
Canary Islands	43,194	36	49,888
Italy	232,073	98,165	540,566
Austria	}	.....	.....
Hungary	1,639	.....	.....
Greece	.....	9,200	7,898
Algeria	63,502	15,602	93,176
French West Africa	27,087	.....	5,455
Portuguese W. Africa	31,173	8,747	28,812
Chile	.....	353	5,412
Brazil	31,499	9,818	68,249
Uruguay	5,536	11,766	50,955
Argentine Republic	8,314	31,375	180,447
Channel Islands	3,298	1,748	18,011
Gibraltar	123,558	7,918	59,812
Malta	14,780	11,582	13,798
Egypt	63,374	40,452	169,001
Anglo-Egypt. Sudan	.....	.....	.....
Aden and Depend	5,761	.....	.....
British India	.....	10,545	98,912
Ceylon	.....	3,883	26,393
Other countries	35,609	44,953	179,944
Total	1,995,895	606,548	4,096,578

QUANTITY AND VALUE OF EXPORTS, APRIL AND FIRST FOUR MONTHS

	Gross Tons April	First 4 Mos.
1920	1,995,895	10,361,664
1921	606,548	6,003,880
1922	4,096,578	17,333,082
	Value	
1920	£7,838,082	£38,324,153
1921	1,309,817	15,388,022
1922	4,650,455	19,665,529

Coal Paragraphs from Foreign Lands

GERMANY—Production in the Ruhr region during the week ended May 25 was 1,598,000 metric tons, according to a cable to *Coal Age*, as compared with 1,889,000 tons in the preceding week.

ITALY—The price of Cardiff steam first is quoted at 38s., according to a cable to *Coal Age*. Last week's quotation was 39s. 3d.

INDIA — The market is firm. Mills and railways are purchasing. Foreign coal is arriving. The Government has prohibited the export of coal under the Sea Customs Act except by the Crown or under permit from the Customs Collector for bunkering purposes.

BELGIUM—Sales are still insufficient, except in the case of certain best quality washed sorts. In spite of the increase in production sales of coke are easy. Domestic classed kinds of anthracite find a steady market. There is a slightly improved industrial call.

Hampton Roads Pier Situation

	Week Ended June 1	June 8
N. & W. Piers, Lamberts Point:		
Cars on hand	3,677	3,365
Tons on hand	195,892	179,235
Tons dumped	200,979	215,567
Tonnage waiting	59,600	20,000
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,711	1,588
Tons on hand	85,550	79,400
Tons dumped	92,101	120,957
Tonnage waiting	20,909	12,326
C. & O. Piers, Newport News:		
Cars on hand	911	2,274
Tons on hand	67,500	113,700
Tons dumped	57,869	85,173
Tonnage waiting	3,300	3,635

Export Clearances, Week Ended June 8, 1922

FROM HAMPTON ROADS:

	Tons
For Canal Zone:	
Am. S.S. Cristobal, for Cristobal	9,508
For Italy:	
Ital. S.S. Mincio, for Naples	6,910
Jap. S.S England Maru, for Puerto-ferrajo	7,450
Dan. S.S. Nordamerika, for Puerta Chicama	1,295

Pier and Bunker Prices, Gross Tons

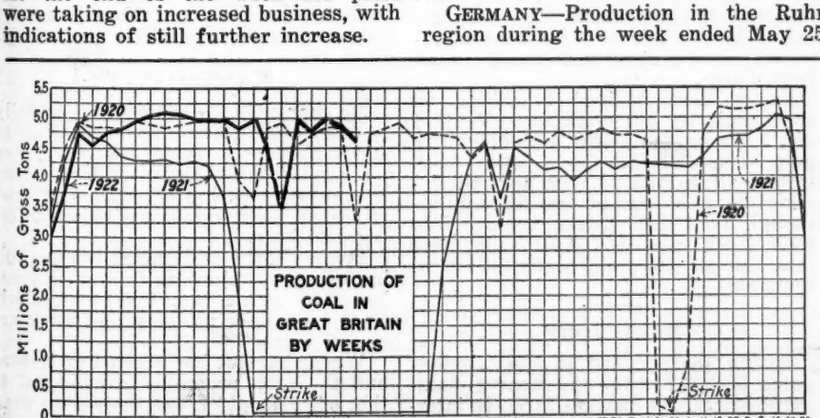
	June 3	June 10†
PIERS		
Pool 9, New York	$7.00@$7.25	**$7.50@$8.00**
Pool 10, New York	6.60@ 7.00	**7.50@ 7.80**
Pool 9, Philadelphia	7.25@ 7.50	*7.00@ 7.50*
Pool 10, Philadelphia	7.00@ 7.25	*6.60@ 7.15*
Pool 71, Philadelphia	7.50	7.50
Pool 1, Hamp. Rds	6.00@ 6.10	**6.25@ 6.65**
Pools 5-6-7 Hamp. Rds	5.80@ 6.00	**6.25@ 6.50**
Pool 2, Hamp. Rds	5.60@ 5.80	**6.50**
BUNKERS		
Pool 9, New York	$7.30@$7.55	**$7.80@$8.30**
Pool 10, New York	6.90@ 7.25	**7.80@ 8.10**
Pool 9, Philadelphia	7.40@ 7.85	*7.25@ 7.60*
Pool 10, Philadelphia	7.00@ 7.25	*6.85@ 7.20*
Pool 1, Hamp. Rds	5.75	**6.25@ 6.60**
Pool 2, Hamp. Rds	5.75	**6.25@ 6.50**
Welsh, Gibraltar	43s. f.o.b.	43s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	43s. f.o.b.	43s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	43s t.i.b.	43s. t.i.b.
Welsh, Messina	41s. f.o.b.	41s. f.o.b.
Welsh, Algiers	41s. f.o.b.	41s. f.o.b.
Welsh, Pernambuco	65s. f.o b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b	65s. f.o.b.
Welsh, Madeira	42s. 6d. f.a.s.	42s. 6d. f.a.s.
Welsh, Teneriffe	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Malta	44s. 6d. f.o.b.	44s. 6d. f.o.b.
Welsh, Las Palmas	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Naples	38s. f.o.b.	38s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o b.
Welsh, Singapore	57s. 6d. f.o.b.	57s. 6d. f.o b.
Port Said	51s. 6d. f.o.b	51s. 6d. f.o.b.
Alexandria	43s.	43s.
Capetown	35s. 3d.	35s. 3d.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff :	June 3	June 10†
Admiralty, Large	27s.@27s.3d.	*26s.9d.@27s.*
Steam, Small	18s.6d.@19s.	*18s.6d.@19s.*
Newcastle:		
Best Steams	23s.	**24s.**
Best Gas	22s.6d.	22s.6d.
Best Bunkers	21s.@22s.	*20s.@21s.*

†Advances over previous week shown in **heavy type**; declines in *italics*.



North Atlantic

Many Inquiries for Delivery After July 1; Orders Scarce

Price Recovery Seen, Some Pennsylvania Coals Quoted Higher Now Than Before Hoover Conferences—Buyers Holding Back Till July—Movement from Roads Less Speculative.

PRICES have recovered from their recent weakness and in some cases Pennsylvania coals are quotably higher than before the Hoover price conferences. Demand is not greatly improved, as most consumers who are able to do so are out of the market until the July 1 freight reductions become effective. Many inquiries are in the market for delivery after that date, but commitments are few.

Southern coals are coming forward from Hampton Roads in undiminished volume, although the tonnage is not so much "on spec" as recently. The mine-price basis of these coals is being held to the Hoover figure, but Pennsylvania quotations are governed by supply and demand conditions.

NEW YORK

While demand shows no improvement quotations are changing rapidly. The low prices of late May are a thing of the past and the various grades are being quoted at much higher figures.

Large consumers are asking about shipments and quotations after July 1 when the new freight rate becomes effective, but when it comes to actual business as a result of the inquiries there is little doing.

While there were in the neighborhood of 2,000 cars at the piers at the end of the week most of it was already sold and only awaited an order for delivery. With the prices fluctuating as they now are the speculator is not apt to take many chances of being stung with high-priced coal, and for that reason is not bringing much coal to the piers to await buyers.

Heavy tonnages of Southern coals are coming forward but most of it has already been purchased. Quotations for these coals range $8@$8.25, alongside.

CENTRAL PENNSYLVANIA

Production increased slightly last week. Most of the increase comes from the small mines in the vicinity of Punxsutawney and in the non-union fields of Somerset and Cambria. At the wagon mines in the vicinity of Cresson miners have left their work, owing to alleged threats from agitators.

President John Brophy returned last week to his headquarters at Cresson from New York where he conferred with union officials. He had nothing to say about the outlook, although he expressed hmiself well pleased with the decision of the Supreme Court on the Coronado case, saying that it would release large sums of money which would be available for use in the present strike.

UPPER POTOMAC

More men are now at work in the Upper Potomac territory than at any time since the strike was declared. Approximately 20,000 tons a week are now being loaded and shipped. Although the output in the Georges Creek field is not large, headway is being made in the operation of mines. There was a decided stiffening of the market in the week ended June 30.

FAIRMONT

With further gains in the number of mines at work during the first week of June, it was possible to still further increase the output. The average number producing was 143, the highest yet reached, as against about 60 when the strike began. After the second Washington price conference, buyers were again in the market and prices began to mount, soon reaching the maximum of $3.50.

PHILADELPHIA

There is much comment on the fact that prices on Pennsylvania coals have not as yet been fixed. A considerable portion of the operators are holding out for $4.50, and while a compromise at $4 is spoken of, there seems to be a determination to hold out for the top price.

The consumer who is holding off and eating into his stock seems to be in for something of a shock, as there does not seem the least probability that he will be able to buy coal below $3.50 during the balance of the strike.

As to the probable duration of the strike there are some operators who are actually sincere in stating their belief that it will last at least until Sept. 1, and some even put it two and three months beyond that time. It is understood that some real efforts are being made to treat with the miners in certain Pennsylvania fields, on the basis of a new scale. Thus far all the overtures of the operators have been repulsed by the miners, who are still insisting on a general agreement for all four states.

Prices have inclined to stiffen on such coals as are available. Pools 1 and 9 grades are scarce and difficult to get. The railroads have lately been taking some Pool 11, but are still inclined to keep out of the market, although they are cutting heavily into their stock piles and must soon come into the market for greatly increased tonnages.

BALTIMORE

Rising sharply, and in most regions going 50c.@$1 above the Hoover maximum prices, the market is most interesting from every viewpoint. Consumers are now insistent on getting coal and are not paying so much attention to price as to the ability for reasonably quick delivery.

In relation to prices the condition is largely one of regional action. For instance, the operators on the C. & O. and Norfolk & Western are sticking pretty close to the Hoover maximum; some of the West Virginia operators have apparently never heard of Hoover while the Pennsylvania operators claim that they have not received a price list and are therefore selling on the basis of supply and demand.

The demand in this section is growing by leaps and bounds, especially since many consumers are regarding as a strong possibility transportation troubles on the railroads after July 15, due to labor demands. This has also caused ocean freight rates to rise, as consumers in position to take advantage of water-borne coal, in the event of all rail complications, are endeavoring to cover themselves. While the demand is heavy there is not much coal coming East and this applies especially to high-volatiles.

West

DENVER

A few dealers are buying coal now in large quantities. The majority are waiting for the July freight rate reduction. "We'll be swamped with business beginning July," is the expression of most of the operators. Strike conditions remain unchanged.

Present quotations are: Trinidad lump, $4, nut, $3.75 and mine run, $3.50; Walsenburg district, lump, $5, nut, $4.50, slack, $2, mine run, $3.50. The supply of slack is practically exhausted. Northern first grade lignite is selling at $4 a ton and second grade $3.50. Mine run is bringing $2.75 for first grade and $2.25 for second grade. Slack is quoted $1.50@$1.75.

SALT LAKE CITY

Hoover prices on coal are in control of the market, operators at a recent conference, having agreed that they will abide strictly by the Secretary of Commerce's plan and that there will be no profiteering. The demand for slack is still brisk, but there is not much call for the better grades. The public is still indifferent as to the outcome of the strike. Whether a storage rate will be made this year as was fixed in 1921 is not known yet. Most of the dealers are well supplied for the summer trade and are showing no disposition to stock up.

KANSAS CITY

No change in the conditions generally is noticeable. Small mines in Kansas and Missouri supply all the emergency coal needed. In addition the mines in New Mexico are offering all grades of coal. Mines in West Virginia also are offering coal here.

Prices show a wide range but the ruling prices are about as follows: Kansas lump, $5; mine run, $4@$4.50; slack, $2.85. Little or no lump and slack are on the market.

Wheat harvest has started in Kansas and the crop promises to be equal to that of 1918, which was the record year. Business generally shows some improvement.

Anthracite

A Modest Retail Demand Makes Its Appearance

Yard Stocks Getting Low, with No Replenishment in Sight, Except Pea, Which Moves Slowly—Producers Hold Steam Tonnage for Large Consumers —River Coals Active.

A SLIGHT demand at retail is becoming noticeable. Heretofore orders were confined to immediate needs, but lately consumers are placing orders with the request that shipment be made, at least in part, from present yard supplies. Retailers' stocks are getting low and no replenishment tonnage is available, with the exception of pea coal, which is moving slowly.

Buckwheat No. 1 is the only steam size available. Some steam tonnage is being held in storage for large consumers by the producers. River coals are very active and prices are strong.

BUFFALO

No stir of account appears anywhere. An occasional emergency call for a ton or two is promptly filled and that is all. One would suppose that some sort of uneasiness would be apparent after ten weeks of standstill, but there is none. The operators have studied in vain on plans for stimulating buying in warm weather. They have at least not had to do that this summer, but they have had a bigger problem on hand. If they have made any progress now it is not given to the public. For once the public seems willing to wait to the limit, for in getting the best of the strike seems to lie the only chance of getting cheaper coal.

It is plain that the operators are in position to hold out till fall. Are the men as well situated? It looks like the striking of an immovable object by an irresistible force.

NEW YORK

Because of the heavy demand for buckwheat No. 1, pea is about the only size obtainable at Tidewater. Buckwheat tightened considerably the past two weeks and the stocks have been very much reduced.

While the wholesale market is practically bare of supplies, retail dealers are not scurrying around for coal. Most of them have fair stocks in yards and for the most part are delivering all orders.

The consumer has not yet publicly acknowledged the strike. If the reverse is the fact it is not noticeable. There is no anxiety being shown by consumers and retail dealers are not being given sufficient orders to keep their employees busy.

Producers have considerable buckwheat in storage but much of it is being reserved for railroads and other large consumers. Wholesale dealers receive many inquiries for rice and barley but cannot fill them. There was some river coal offered here last week.

PHILADELPHIA

As a good many families are departing from the city for the summer the retailers have received quite a number of inquiries for coal lately, and some of their customers for the first time seemed to realize that the strike is really a serious condition.

Offerings of even occasional cars of prepared sizes seem to have disappeared entirely, indicating that storage stocks are entirely cleaned up. There is a feeling among many dealers that even yet it is possible to obtain some family coal, but they are finding out that there is nothing to be had.

All spring some dealers, being certain that the strike was only a matter of weeks, have been promising delivery to their regular summer trade as soon as the strike is over. It is believed if the suspension lasts another month, more than one dealer will find it extremely difficult to get sufficient coal when the mines resume.

The companies still have fairly good steam stocks in storage, but they advise inquirers that every ton has practically been sold and is covered by orders already on their books from old customers. The river coal people are making stronger efforts than ever to market their fuel and new business is being closed daily. Most of the offerings are on barley at $1.75@$2.50.

BALTIMORE

Dealers report that interest is at last stirring among their consumers, after having held off from ordering entirely this spring because they were convinced that coal would be sold at prices below the last winter's schedule, which is still in force. Dealers are getting an increasing line of inquiry as to whether they will be able to supply the coal a little later in the season if actual orders are not placed at this time. Few of the dealers are in a position to deliver any material amount at this time. No hard coal is coming through and the supply in yards is rapidly dwindling under deliveries to consumers who are regarded as emergency cases.

BOSTON

Retail demand is so much improved that in the cities the dealers are beginning to limit the deliveries they will make on orders. In certain of the smaller communities the retail dealers are even now without one size or another and all the indications are for a steady increase in the volume moving until through lack of supply the dealers are forced to decline further deliveries.

Small amounts of chestnut are still coming through from storage piles in Pennsylvania but this is confined to a very few producing companies. Most of the latter have only pea and buckwheat in reserve.

Retail prices are unchanged, and are not likely to be modified until mining is resumed, although pea at $12 still does not allow much margin to the retailer, who is obliged in some cases to pay well in excess of $6 per gross ton f.o.b. shipping point.

ANTHRACITE FIELDS

There seems to be a considerable difference in the way the leaders of the union are talking and the way the men themselves talk. The leaders seem to be holding firmly for an increase in wages, but the men themselves appear willing to take a small cut.

The leaders are taking a vote asking the men to authorize them to declare a strike if they see fit. Of course, there are men who would want a strike, but they are in the minority. Many of the newspapers in the region have come out with editorials stating that the men should accept the fair offer of the operators.

South

VIRGINIA

Mines are producing at the rate of about 90 per cent of potential capacity. "No market" losses have been reduced to almost nothing. A shortage of labor alone is about all that stands in the way of capacity production, unless it be a car shortage, such being in evidence only on the Norfolk & Western and the Southern. Buying during the first few days of June was on a heavier scale than ever and prices were climbing toward the maximum agreed upon at Washington.

BIRMINGHAM

Business is gradually coming from districts where the coal supply is affected by the strike. Mines in Walker County and other points in the western section of the field in a position to ship through the Memphis gateway advantageously, have booked a considerable tonnage during the past week. Most of the coal bought was for railroad use, although there were some orders taken for industrial interests. Inquiry is good and several deals are pending calling for a large quantity of coal to be shipped into the West.

The Missouri Pacific bought from 500 to 750 cars in addition to the business previously placed in the district. Trade in normal territory is reported as slightly improved.

There is no demand for domestic sizes outside of the better grades. Cheaper coal is hard to dispose of as the steam market is not strong enough to absorb it.

Quotations, unlike those in many of the other non-union fields, were not disturbed by the Hoover schedule as agreed on for Alabama, as prices of all grades were and are now much below the maximum fixed.

Production is again up to the high figure which was reached and maintained for quite a while recently, approximately 325,000 tons per week. Some labor is leaving the district, but as yet there is no shortage reported.

Chicago and Midwest

West Kentucky Climbs Fifty Cents in a Week

Advance May Stop at $4.25, However, for Eastern Kentucky Remains at About Hoover Level of $3.50—Alabama Is Shipping Into the North.

THE steady advance of western Kentucky coal throughout the Midwest region to a height of $4.15, with prospects of going even a little higher, got the market spotlight during the past week. The question everybody asks is: "Where will it stop?" Wise men of the trade think it will stop soon for eastern Kentucky is holding to the Hoover prices and the price spread between the two ends of the bluegrass state may have reached its limit for the present.

With the market at this level, Alabama coal is beginning to have a chance at Northern business other than that of railroads. A good deal of this coal is in St. Louis and it may soon be moving in some volume to Chicago or even into the Northwest.

Demand for coal is growing constantly stronger, indicating a swiftly awakening interest on the part of a good many consumers in addition to the railroads. The railroad pool has bought some large shipments lately. This occasional emptying of certain markets has sent slight panicky flutters among some classes of consumers, but it can be fairly said that coal trading is in a reasonably healthy state, with little speculating going on. There is enough business afloat to provide a living for practically all of the legitimate concerns and enough coal available to supply all of the demand.

Retail trade is stagnant. Hard coal in storage is low but prices have not moved noticeably. The mining fields of Illinois and Indiana are quiet, with considerable repair work progressing at many properties and good feeling prevailing generally between operators and men.

CHICAGO

Marked advances in western Kentucky prices featured the coal market during the past week. Coal which began the week at $3.50@$3.65 had accomplished an increase of exactly 50c. by the close of business Saturday noon, leaving the top price at $4.15. It was prophesied by a number of men active in the trade that the ascent could not continue much longer. Plenty of eastern Kentucky mine run is available on this market at $3.50 with slack at $3.25 and lump $3.75. These prices are not going to rise, eastern Kentucky producers say. They propose to stick to the "gentlemen's agreement" with Mr. Hoover—though F. S. Peabody, one of the biggest Western operators has publicly declared it to be his belief that "where competition is keen, there can be no such thing as a "gentlemen's agreement,'" If they do stick, it is assumed the market will not stand for a greater spread between eastern and western Kentucky coals than is effective now.

Buying is brisk in some quarters for railroads are urging their fuel committee to secure heavy tonnages for them. It is so brisk, in fact, that those of the railroads who have been disgruntled with the pool plan from the start are now doing some buying outside at whatever they must pay. A good many other big consumers are taking a wide-awake interest in coal. Inquiries are so numerous that they plainly show the tremulousness that exists in certain breasts over a possible shortage.

Only small quantities of West Virginia fuel penetrate this far west. Contract buyers and regular customers absorb practically all of this eastern coal at varying prices. Smokeless which actually gets into the open market goes at $3.25@$3.75. Anthracite is getting low, especially on the larger sizes. The emptying of the dock storage of this coal is beginning to worry dealers around here, who had counted on getting some of it, but the price has not advanced.

WESTERN KENTUCKY

Western Kentucky not being able to reach an agreement with Mr. Hoover over the maximum price of coal, has decided to go right ahead on its own maximum basis of $4.25, regardless of what any other fields may do. That maximum may be reached soon. Whether the market will stop when it hits that level is a question.

Operators have not been especially pleased with press reports, which indicated that western Kentucky wished to force high prices. The fact that west Kentucky is a union field, paying the peak union prices, as against 1917 levels in some other operating fields, has not been given proper consideration in Washington, nor the fact that it is a pit field, where costs are greater than in operating drift mines.

Demand is picking up, there being a good demand from Chicago, Detroit, and through the C. F. A., and Central Northern districts, with some river movements. The fact that western Kentucky is quoting $3.75 for all sizes, instead of $3.50 mazimum for mine run and $3.75 for prepared and $3.25 for screenings in other fields, would not indicate that she is getting as much for her coal now as the other fields, comparing production cost.

LOUISVILLE

Since the first of June demand has picked up again and prices are fully recovered to the peak values quoted in late May prior to the slump. Western Kentucky is quoting $3.75 on all sizes and expecting $4 soon. Eastern Kentucky is quoting a $3.50 mine run basis, with $3.75 for prepared and $3.25 for screenings. However, there are any number of eastern Kentucky operators not affected by the conference in Washington, who are expected to ask all that the market will stand.

Demand is much stronger generally, with an increased demand from many Northern and Eastern points, as shown by the fact that Alabama fuel is moving north to Pittsburgh and Chicago. It is believed that in spite of reduced freight rates effective July 1, tonnage will move quite freely until that time and even better thereafter.

SOUTHERN ILLINOIS

Quiet prevails throughout the entire field. There is no commercial coal left in the Carterville district but a little still remains on track in the Duquoin field, held for contract.

The unmarried miners still continue to leave the districts and it is rumored that many of these are going to the non-union fields in the south. The miners seem pretty well contented to play the waiting game, although in sections they are anxious that something be done to relieve the situation.

In the Mt. Olive district the coal is pretty well cleaned up. There is, however, a big tonnage on track held in reserve for the City of Chicago and some little additional coal held in reserve for contract customers.

In the Standard district it is rumored that there are still about 4,000 tons in reserve and this is being doled out at $4.50 for both steam and domestic.

ST. LOUIS

There is a little activity in steam, principally because the supplies are running low. For the first time Alabama this week came into the market on a rate of $4, with a mine price of $1.65@$1.75 for mine run. The latter part of the week this jumped up to $1.85@$2, occasioned by the railroads going into the west Kentucky field rather strong. West Kentucky here ranges $3.75@$4.

Railroad business seems to have been the big factor, but this tonnage was not moving this way. The Missouri Pacific is reported in the market and the Frisco is bringing in coal from Alabama. It is understood that one division of the Frisco below Springfield is going over entirely to oil on a contract for three years.

There is no domestic activity except in a little coke and a little smokeless. Country business is quiet on domestic, but there is some little demand for threshing coal.

Canada

TORONTO

Trade shows some improvement with a slight increase in the demand for both anthracite and bituminous and stocks on hand are diminishing. There is some shortage of stove coal but good supplies of other grades. Receipts of bituminous are tight, but about equal to the demand. Consumers are anticipating lower prices on the termination of the strike and orders are generally limited to immediate requirements.

Quotations are as follows:

Retail:	
Anthracite, egg stove and nut.	$15.50
Pea	14.00
Bituminous, steam	9.25@9.75
Domestic lump	11.25
Cannel	16.00
Wholesale, f.o.b. cars at destination:	
3 in. lump	9.25@10.00
Slack	8.00@ 8.75

Northwest

Dock Stocks Melting Prices Mount Steadily

Receipts Throughout Northwest Fall Far Short of Normal—Railroads Buy Big Tonnages but Small Consumers Do Not Fret about Anything.

DOCK stocks throughout the Northwest continue to melt steadily before the purchasing advances of a few big buyers, principally railroads. Prices have firmed up and in some cases have advanced with every prospect of going higher. Receipts by vessel are far short of normal so that as things stand, the Northwest may yet face a serious situation. However, the average small consumer is paying not the slightest attention to the strike situation or the disappearance of the storage piles from the docks. Nothing seems to disturb his equanimity, although it cannot be denied that the scene is all set for a buying rush that may cost a good many people a great deal of money.

MILWAUKEE

All grades of soft coal have been advanced 50c.@75c., because of the growing cost of replacement. If conditions continue unchanged as far as the strike is concerned other advances are bound to follow.

The market is extremely quiet, the demand being confined to large consumers of soft coal. There is practically nothing doing in anthracite. Domestic consumers are naturally unconcerned over the fuel situation at this season of the year. Coal keeps coming by Lake, but the total receipts thus far this season are far behind the record during the same period last year.

MINNEAPOLIS

Considerable publicity in the daily press as to the probable situation has appeared and should have some effect toward stimulating buying. But so far as can be observed, it has had no effect yet. The only buyers who seem to be alarmed about the situation are the larger consumers, railroads and public service corporations, who have been quietly contracting for coal for some time.

Perhaps 15 or 20 per cent of the soft coal on the docks has been contracted by railroad buyers. But that tonnage will still be a part of the total for the current year, whatever that may be. And the remainder of the carryover has not entirely disappeared. Several dock companies have withdrawn quotations. They have about exhausted their supplies.

The Northwest will need a heavy tonnage during July, August, September, October and November, if there is to be the customary supply of coal on the docks. But it is not yet assured that this will not be available. If a real scramble for coal were to be started it would speedily absorb what coal is available, and create a booming market.

Recent sales of considerable tonnage to railroads have removed the excess stocks on the docks, and several concerns are out of the market. Others are holding dock run at $6.75 f.o.b. dock, and lump at $7. These prices simply mark a return to the regular run of prices, which had been sharply shaded because of excess stocks and no demand. It would not be surprising if there would be public criticism that the strike has increased prices sharply.

DULUTH

A steady market of $7.50 for lump, $7 for run of pile, and $5.50@$6 for screenings is confidently expected by dealers before another week has passed. Indications point to the fact that this will by no means end the price rise even if the strike should be settled soon—a thing which seems impossible.

Accurate figures of the free coal on docks are not available at present, but the amount is known to be smaller than is generally believed and totally inadequate to take care of the needs of the section of the country which depends upon Duluth-Superior for its supplies.

Receipts at docks during May aggregated only 93,971 tons of bituminous, bringing the total to May 31 up to 133,702 tons, 129,140 tons of bituminous and 4,562 tons of anthracite. Only eleven steamers arrived during the month as compared with 173 during May last year. Hard coal receipts showed a decrease of 251,686 tons and soft coal receipts dropped 1,539,952 tons as compared with last year.

Official figures to June 1 show that there have been shipped down to Lake Michigan and near-mine ports from Duluth-Superior harbor 59,300 tons of coal. Since compilation two more boats have loaded but not cleared. The larger portion of this coal was taken by the Chicago, Milwaukee & St. Paul R.R. That the railroads are becoming nervous regarding the fuel supplies is regarded as shown by the heavy shipments that are being made from their docks here to their fueling depots throughout the Northwest and elsewhere. Shipments from the docks aggregated 18,587 cars during May, as against 9,826 cars during April and 7,883 cars during May last year.

Large operating concerns are also buying. United States Steel subsidiary corporations are in the market, as are independent iron mining companies. Dealers are sitting tight, however, and are waiting for the reduction in freight rates, due July 1.

Screenings are virtually cleaned out. Anthracite is dead, but the scarcity of supply and the certainty of a shortage unless the strike ends before the first of August, is maintaining price levels.

New England

Light, Scattered Buying Has Slight General Effect

Tendency to Hold Back Due to Washington Advices and Nearness of Lower Freights—Resumption of Textile Mills has no Immediate Reaction.

THE week shows no material change in the general situation. Demand in this territory is extremely light and except for scattering purchases there is almost nothing doing. Naturally, buyers are influenced both by news items from Washington and by the 10-per cent reduction in freight rates, which now is only a fortnight or so ahead. Southern coal prices are wavering and the coastwise movement is now mainly on contract.

Certain of the textile mills resumed June 5 but only a small beginning has been made and the coal market is not likely to show any reaction for several weeks to come.

Prices both at this end and at Hampton Roads have no real stability; $8 on cars has been named for No. 1 coals in small lots, while a larger order will gladly be accepted for $7.50. We have heard no actual sale at less than $6.25 f.o.b. Roads, but we are given to understand that firm offers at $6.00 would be accepted. Neither New York bunker contractors nor large industries in the West have purchased recently to anything like the extent that prevailed three weeks ago, and in consequence there seems ample fuel available at the Virginia terminals. Spot quotations of Pensylvania coals are shown in the Weekly Review.

Accumulations have further increased at Hampton Roads. There are still 60-day reserves here with practically all the large users, railroads and utilities as well as mills, and there is today no indication of any accelerated demand during June or July.

All-rail receipts have increased a little, due to somewhat larger output in central Pennsylvania, but this will hardly be sustained through the month. Coastwise freights have settled down to a cost-plus basis and there is no question that Hampton Roads coals will continue to dominate this market through the balance of the season to the extent that they are available. Even with the 10 per cent reduction in July all-rail coal will still be handicapped for a market in New England.

Eastern Inland

Activity of Steel Buyers Stiffens Connellsville Prices

Other Markets, Where Hoover Recommendations Apply, Softer—Demand Quiet Pending Effectiveness of Lower Freights—Conditions Presage Heavier Call and Possibly Prices Above Hoover Level.

STEEL buyers are active in the Connellsville region and prices are strong. As this section is not covered by the Hoover price recommendations operators are experiencing a rising market and spot quotations have fully recovered from their recent slump. Other markets are not so strong. Demand is quiet, as buyers await freight reductions after July 1.

With the shortened Lake season, dwindling reserves and heavier industrial consumption the market will soon call for a larger tonnage. When that time comes prices may exceed the limit fixed by Mr. Hoover if the demand becomes insistent enough.

PITTSBURGH

Under date of June 9, the Pittsburgh Coal Producers' Association addressed a letter to Robert R. Gibbons, president of District No. 5, U. M. W., reciting that on March 13 the association had proposed a scale conference, which on March 16 the local of the miners had refused, pointing out that by this time it must be apparent that the Pittsburgh operators will not join in a four-state agreement and suggesting that a scale conference now be held.

Trading is confined practically to Connellsville coal. The Connellsville operators have evidently failed to reach any agreement with Secretary Hoover as to price limitation. Right along report has had it that they desired a maximum limit of not under $4.50.

Buying of Connellsville coal by steel companies has increased. The market is up fully 50c., being now quotable at $3.75 for steam, with occasional sales at slightly higher figures. There does not seem to be any regular byproduct on the market, and it is said that coal from some mines, formerly of byproduct quality, would no longer pass muster on account of loose work on the part of the men.

COLUMBUS

Buyers are now laying low until after the reduced freight rates are effective. As a result only a fair tonnage is moving and that is designed to take care of cases where there are no reserve stocks. The best buying is now being done by railroads and public utilities with the latter taking a pretty fair tonnage. Quotations are around those fixed by Secretary Hoover's conference.

Retailers are only buying in limited quantities as their stocks are good and demand is at a minimum. Dealers are trying to clean up their stocks before lower freight rates reduced prices. Householders as a rule are not stocking up to any extent as they are waiting for conditions to be settled.

Shippers believe that buying pressure will come after July 1 and that higher prices will offset the lowered freights. Then the Lake trade is going to complicate matters and unless shipments are started soon there will be a big tonnage to be made up later on.

EASTERN OHIO

Inquiries for fuel have noticeably diminished. There is little urgent demand and the supply available is ample to meet current needs. In the face of slow demand, prices have stiffened somewhat approximate maximum figures resulting from the recent Hoover conferences.

Lack of demand is accounted for by reserve stocks sufficient for some weeks yet. Likewise, a reaction from present prices is looked for because of the prevailing apathy in demand.

In the Lake trade, coal is being dumped about as fast as it is coming forward and Toledo and Sandusky are handling practically all of the cargo coal at the present time. Lower docks handled during May 1,304,281 tons of cargo coal and 380,111 tons of fuel for vessels, making a total of 1,341,392 tons. Coal forwarders predict that the requirements of the Northwest cannot be filled during the remainder of the Lake season and that it will be necessary to forward a considerable quantity of coal to the Northwest by rail, which factor will contribute in no small degree to intensify a car shortage.

Eastern Kentucky and West Virginia mine run, slack, nut and slack is $3.25 @$3.75, with lump around $4. Receipts at Cleveland during week ended June 3 were the smallest in quantity since late April, amounting to 967 cars. This volume is 545 cars under the average weekly receipts during the first quarter of the year.

DETROIT

Very little interest is being manifested in the market. Apparently most of the large steam consumers are still comfortably fixed in the matter of reserve stocks. The freight rate reduction is held to be a leading factor in withholding orders at this time.

Wholesalers and jobbers are warning their customers that there is likely to develop a volume of demand after July 1 that will be greater than the mines will be able to satisfy. The point is emphasized that those now holding back may find they are obliged to pay a price at the mines that will more than counterbalance the reduction in freight charges.

Expression is given among some to the thought that conditions at present, with almost no buying demand and coal in apparently adequate supply, do not constitute an emergency justifying efforts of representatives of the government to arrange a maximum price agreement.

CLEVELAND

All other phases of the coal situation have been subordinated to the efforts of coal operators to find some basis upon which they can agree to start negotiations with the unions for ending the strike. In order to accomplish this they are willing to grant the men the check-off system, and probably would not hold out for such deep wage cuts as were talked of a few months ago.

The work of the operators favoring strike settlement, with some compromise, if necessary, has encountered opposition on the part of the Pittsburgh owners. These are said to oppose the check-off and to be disinclined to any compromise to the unions.

Upper lake docks are being swept bare of coal and demand from that quarter soon will be insistent. To June 1 only about 1,991,000 tons had been loaded at lower ports and only 1,491,000 of this went to the Northwest. This movement compares with 4,669,000 tons for the same period of 1921. With more than two months of the Lake season gone, congestion seems almost certain unless production on a big scale is resumed shortly.

Starting with stocks of 63,000,000 tons at the beginning of the strike industrial supplies are now estimated around 30,000,000 tons, with famine conditions looming once the level gets below 20,000,000 tons. That point is expected to be reached, with present increased industrial activities, by July 1. For the moment the situation is not acute, but nothing can prevent its becoming so if production is not resumed soon.

BUFFALO

For the first time come reports that this or that consumer is getting out of coal. The fact is that the proceedings fail to proceed. Secretary Hoover's fixing of certain prices, although it stopped the advance for the time, does not appear likely to keep them down long. The tendency is upward. Certain members of the trade point to the increasing output, but they admit that the consumption is increasing also.

The confident operator is still looking for the creeping back to work that he saw in the air and he further predicts a stampede before long, but he does not really have any facts.

The price range is from $3.25 for mine run in general to $3.50 for slack and three-quarter, slack being scarcer than anything else. If anyone has even semi-gas coal he can sell it for $3.75, mine price.

The receipts of grain from the Upper Lakes continue in large volume. The fleet looks for ore and coal to offer in large amounts late in the season. Bituminous coal from West Virginia via Ohio ports amounted to 508,710 net tons to June 1. For the past week the receipts were 85,700 tons.

NORTHERN PANHANDLE

Trial of a group of strikers on the charge of having violated an injunction has prevented further acts of violence. During the week ended June 3, the mines produced a heavier tonnage than had been possible during the greater part of May. A better market was also a contributing factor in the increase.

Cincinnati Gateway

Railroads and Steel Mills Help in Recovery of Prices

Recent Scurry Forced Quotations on High Volatile From $2.75 to $3.25@ $3.50—Lake Market a Stronger Factor—A. F. L. Session Rouses Interest.

STEEL mills and railroads are again active factors in this the biggest market adjacent to the non-union fields. Their buying combined with the attitude assumed by the smaller operators and producing companies in the southeastern and eastern Kentucky fields has brought about a recovery in price that about equals the values set some three weeks ago.

There was a little upward climb after the announcement of the Hoover maximum prices, but that was slight compared with the scurry to get to the dividing point within the past few days. From $2.75 a ton the price on high volatile steadily climbed until it soon reached the level of $3.25@$3.50. The Lake market is in stronger evidence.

HIGH-VOLATILE FIELDS

KANAWHA

There has been a marked increase in the output. About five times as much coal is now being produced as was the case at the outset of the strike, owing to the increase in the number of plants at work. Between the two Washington price conferences there was a slight slackening of production, but during the first few days of June, there was a decided revival in demand and prices began to move upward.

LOGAN AND THACKER

After the conference at Washington had fully developed just what the maximum price was to be, there was a decided increase in inquiries and orders, with prices crawling back near $3.50. As has been the case for the last two months consumers are interested in mine run and slack alone, there being little domestic demand.

Even after the market had softened to some extent, there was no diminution in the output of the Thacker field and during the first three days of June, inquiries and orders were more plentiful than ever. Mines are shipping about 160,000 tons a week in the Williamson field alone, most of this output for Western markets, with a large tonnage destined to Lake.

NORTHEASTERN KENTUCKY

Under the stimulus of heavier buying prices are rising again. Mines are now shipping about 75 per cent of capacity, railroad disability cutting some figure in retarding production. There is still one isolated section where men are on strike, but the field as a whole has not been and is not being affected.

SOUTHEASTERN KENTUCKY

Production continues to increase, with practically every mine running full blast. Creech Coal Co., on Wallins Creek, the last of the big mines that have been idle, has started up on a strictly non-union basis. It is understood that nearly 100 per cent of their regular employees reported for work, and they were swamped with applications from outside miners.

Car supply is not so good as last week. Tracks are badly congested between mines and Cincinnati.

CINCINNATI

The accumulation that was so evident a fortnight ago has entirely disappeared and the old procedure of forcing the buyer to pay is again in effect. Western railways have been seeking coal and some of these have been offering equipment to move tonnage. Lake buyers too are stronger in evidence with a large amount moving east on Lake Erie. With the American Federation of Labor going into session here attention has already been directed through Sam Gompers' discussion of the strike situation and the labor viewpoint on the Coronado Coal decisions in the United States Supreme Court.

Smokeless is trailing high-volatiles, the upward trend in price not being so pronounced as in the straight bituminous sales. Lump is still commanding a premium and where it is slow in forcing sales the make of many mines is turned to a straight mine run basis. Tidewater business has not been near the peak and more smokeless has been turned to Inland business this week.

The retail situation is adjusting itself. Retailers have gone to $8 for Pocahontas lump, after several weeks of some firms underselling by 50c. Mine-run is $6.75 and high-volatile lump is $6.25@$6.75, with the slack $4.50@$5 and a chance of a large increase on these last two in event that the river supply gets lower, it being declared that there is now about three weeks' shipments awaiting to be transferred.

LOW-VOLATILE FIELDS

POCAHONTAS AND TUG RIVER

More cautious buying late in May failed to affect Tug River production, and even a holiday failed to reduce the Pocahontas output. Buying is now on a more active scale than ever. This heavier buying is reflected in a rise in prices.

In Tug River there was an increasing demand in evidence just as soon as all doubt as to what prices were to be were removed. Consumers are paying not far from the maximum of $3.50.

NEW RIVER AND THE GULF

Additions to the list of New River mines in operation are making possible increased production. Approximately half of the mines are now in operation. During the first week of June and after the maximum price had been agreed upon, there was a resumption of buying on a heavier scale and prices stiffened somewhat.

Notwithstanding a slight recession of demand and prices at the time of the price conferences, Winding Gulf mines have continued their heavy production, the rate being about 30,000 tons a day.

Coke

CONNELLSVILLE

The Carnegie Steel Co. is now operating 36 blast furnaces and expects to blow in another, this comparing with 34 stacks in operation April 1. Other iron and steel interests are, on the whole, doing a trifle better in the matter of coke supplies. Production of Connellsville coke gains a trifle from week to week.

There has been a little buying of furnace coke on behalf of Eastern consumers, at around $7, which has been the quotable market lately. A few sales of foundry coke are being made, the regular price being about $7.50.

Demand on the part of furnaces is extremely light, not because furnaces could not operate if they had coke, but because the price that would be asked would not justify operation. The demand from foundries is likewise light, but because the foundries as a whole are not busy, otherwise their stocks would have been exhausted some time ago.

The *Courier* reports production during the week ended June 3 at 34,650 tons by the furnace ovens and 13,820 tons by the merchant ovens, making a total of 48,470 tons, a decrease of 10,660 tons, attributed to the Memorial Day holiday.

UNIONTOWN

Apparently the effort to control the coal market during the strike has not proven effective. Consumers, particularly steel interests are bidding against each other for Connellsville tonnage. Quotations on Saturday ranged $3.50@$4, with sales recorded principally at $3.75@$3.90.

Before Hoover stepped in, the market rose steadily since the strike commenced and at that time was quotable at $3.75@$4.25. Immediately after Hoover announced his price plan the market dropped $1 to a point below what the Commerce Secretary had fixed as a fair price.

Then a group of some twenty operators got together at Uniontown and decided that they would ask Hoover for a price of $4.50 from the Connellsville region, the extra dollar representing the cost of mine guards. Mr. Hoover declined to view the situation in that light and the day following the conference at Washington the Connellsville market again commenced to bound.

BUFFALO

The situation is practically the same as with coal. Even a good movement of manufactured iron and steel does not exhaust the supply and send up prices. Some jobbers report a half dollar or so above the former $7 for 72-hr. Connellsville foundry, some do not. Furnace is $6@$6.50 and stock, $4.50.

News Items From Field and Trade

ALABAMA

The Iron Products Corporation, New York, and its subsidiaries, the Central Foundry Co., Central Iron & Coal Co., Central Radiator Co., and Molby Boiler Co., announce the opening of a district sales office in the Jefferson County Bank Bldg., at Birmingham.

COLORADO

Major Louis D. Blauvelt, at present Colorado state highway engineer, has been appointed chief construction engineer of the Moffat tunnel project by the tunnel commission. He will probably resign as state highway chief at an early date.

For fifteen years Major Blauvelt was connected with the Moffat (Denver & Salt Lake) road as engineer. Under his direct supervision five tunnels have been built on this road.

The tunnel under James Peak will open one of the greatest coal fields in the world in Moffat and Routt counties, and Unitah basin, Utah.

One more large coal mine has been added to the state's revenue producers, located under an entire section of land eighteen miles north of Denver, in the northern coal fields. It is known as the Morrison mine. At an expense of over $180,000, a modern preparation plant has been installed. The capacity is 1,500 tons of coal daily. A three-compartment hoisting shaft has been sunk, working entries driven, disclosing a clean breast of sub-bituminous coal 9 ft. in thickness, upon which the state's leasee is now mining and making an extensive production.

ILLINOIS

Edgar Mordue, formerly associated with the General Fuel Company, announces the organization of the **Edgar Mordue Coal Co.,** with offices in the Old Colony Bldg. The company will deal in domestic, malleable, New River-Pocahontas smokeless, by-product and steam coals.

The Cherry mine of the St. Paul Coal Co., of Chicago, may not be dismantled and closed down, according to orders received from the main offices of the company. The mine is well known throughout the Middle West on account of a fire which occurred in the workings in 1909 in which 268 lives were lost.

H. T. Sheppard, of Chicago, was in Herrin recently visiting mines in that vicinity. He is secretary-treasurer of the Taylor Coal Co., Chicago.

The Chicago Title & Trust Co., as trustees, by attorney, John W. Preishs, Pana, has instituted suit in the Christian County court to foreclose a trust deed against the **Smith-Lohr Coal Mining Co.,** Pana. The bill recites the defendants issued $125,000 of gold mortgage bonds bearing interest at 5 per cent July 1, 1905 and due in 1925. The trustee alleges that no interest has been paid since 1913 and that there is now due the sum of $188,575.30 to the holders of the bonds and they desire foreclosure for failure to comply with the terms of the trust deed and the bonds.

A reorganization of the **Sharon Coal & Brick Co.** has been effected, the old company to be succeeded by the **Sharon Coal Co.** The new company will have capital of $200,000, and it is expected that it will soon issue bonds for $150,000. A switch will be built from the property, located near Georgetown, Ill., to connect with the Cairo Division of the Big Four. The mine will be electrified and supplied with modern equipment. Robert B. Pettigrew, for some time manager of the Brady Branch mine near Danville, will be in charge of the mine.

The United Coke & Coal Co. announces that offices have been opened in the Fisher Bldg., Chicago, for the sale and distribution of Roberts byproducts and Connellsville industrial, foundry and domestic coke; also Pocahontas and all grades of Illinois, Indiana and Kentucky coal. J. G. Supple, formerly of the Wisconsin Lime & Cement Co., and Lewis D. McClaren, formerly of Rogers, Brown & Co., are actively associated with the company.

The Consolidated Coal Co. is now working about twenty union men at its No. 9 mine, Murphysboro, pumping water and doing some developing work. The mine is the one which was flooded late last November and which for a time came near being abandoned by the owners for that reason.

The Martin-Howe Coal Co., Pike County Coal Co., Tecumseh Coal & Mining Co., and the **Simplex Coal & Mining Co.,** have been consolidated into an organization to be known as the **Howe-Coulter Coal Co.,** with offices in the McCormick Bldg., Chicago.

KENTUCKY

The Harlan Coal Co., a Louisville corporation, is preparing to develop 8,000 acres of coal and timber land in Harlan and Bell counties. About four miles of railroad will be built and a saw-mill erected. A large number of houses are to be built. Ivor Livingston, of Chattanooga, chief engineer for the company, is now on the ground directing the work.

The Boone Trail Coal Co., Pineville, is the latest addition to the membership of the Kentucky-Tennessee Coal Operators' Association.

The Standard Elkhorn Coal Co., Louisville, has filed amended articles increasing its capital from $200,000 to $300,000.

MINNESOTA

E. N. Saunders, Jr., president of the Northwestern Fuel Co., was at Duluth recently looking over the market situation.

Colonel John H. Sessions, who at the age of 73 years retires as Northwest agent of the Philadelphia & Reading Coal & Iron Co., after 28 years' service, was presented with a loving cup by Duluth-Superior coal dock operators recently. The presentation was made at a banquet at the Kitchi Gammi club at Duluth. E. T. McDonald will succeed Mr. Sessions. Both Mr. Sessions and Mr. McDonald are of St. Paul.

The City of Waseca is within its legal rights in levying a tax for the maintenance of a municipal coal and woodyard, according to a decision by the State Supreme Court. A local lumber and coal concern attempted to prevent the city from conducting a coal business, but the court rules against the move.

MISSOURI

The Pittsburgh Testing Laboratory announces the opening of a sales office with an inspection bureau in the Railway Exchange Bldg., St. Louis, and the appointment of Colonel N. C. Hoyles as district manager.

NEW YORK

A visitor in New York early in the month was **C. L. Green,** director of the employment relations department of the Consolidation Coal Co., with headquarters at Fairmont.

Much interest attaches in West Virginia to the determination of the **Diamond Fuel Co.** case in the United States Circuit Court of Appeals of the Second Circuit in the City of New York. It was in February, 1921, that several coal companies of West Virginia filed a petition in involuntary bankruptcy proceedings in the United States District Court for the Southern district of New York against the company. The company had been engaged in operating mines in Barbour County, W. Va., and in purchasing coal and exporting it. As far back as October, 1920, suits in admiralty in the United States District Court in Baltimore had been instituted by the Kanute Steamship Co. and other steamship concerns for alleged breach of contract, alleging that vessels had been chartered to carry coal to Europe. After a large tonnage of coal in Baltimore had been attached, it was sold, about $100,000 being realized, this being held by a trustee in the United States District Court for the district of Maryland pending the outcome of legal proceedings. When in February, 1921, the creditors of the company filed the involuntary petition in bankruptcy it was claimed that deeds to certain preferred creditors were a preference within the meaning of the bankruptcy act. A decision was rendered favorable to the contention of the plaintiff companies. Upon an appeal the decision of the lower court was upheld. Claims amounting to approximately $1,000,000 have been filed with John J. Townsend, referee in bankruptcy, these clains being those of coal companies, merchants, banks and others in the state of West Virginia.

A. D. Halporn, who has been associated with the Philadelphia sales staff of the Combustion Engineering Corporation, has now become a member of the New York sales force.

OHIO

The Boggess Coal Co., Columbus, is the name of a new retail concern which operates a yard at White and McAllister avenues. R. B. Boggess is president and general manager, and all varieties of coal are handled. Steps are being taken to put in loading and unloading machinery.

The Harruff, Patton & Harruff Coal Co. has been chartered at Marion with a capital of $100,000 to mine and sell coal. The incorporators are J. B. Patton, Frank J. Harruff, S. H. DeLong, Perry L. Harruff and Samuel L. Prollinger.

PENNSYLVANIA

The Navy Smokeless Coal Co., one of the largest coal mining companies in central Pennsylvania, has sold its holdings, mine equipment, machinery, etc., for a consideration said to be $850,000. The company owned 3,200 acres of Miller seam coal lands at Carrolltown Roads, Cambria County, where the company's opening, known as the Valley Smokeless Coal Mine No. 1, is located. The Navy Smokeless company is composed of the following: Walter Jones, I. E. Lewis, H. Frank Dorr, H. J. Van Dusen, T. Stanton Davis, Fred Custer, William Krug, Dr. H. H. Bennett and Ambrose Shettig. It is understood that the purchaser is a newly formed company, in which T. Stanton Davis and Walter Jones are interested. Charles D. Ames of Philadelphia, who is connected with the International Coal Corporation, is also interested. The new company will start operations as soon as the strike is settled.

The Emmons Coal Mining Co., Philadelphia, has bought out the **Inland Coal Co.'s** Greenwich No. 2 and No. 3 mines, located at Saxman, Cambria County. A. R. Llewellyn, formerly mining engineer of the Emmons company, has been appointed superintendent of this operation, which is now called the **Marion Center Coal Mining Co.**

A State charter has been issued to the **Perry Hills Coal Co.,** Punxsutawney, with a capital stock of $150,000. Ned L. Brown, Punxsutawney, is treasurer of the company and its incorporators are P. L. Brown, Leon H. Hoffman and M. E. Hoffman, all of Punxsutawney.

The Maryland Coal Co., with operations at St. Michael, Cambria County, is making preparations for extensive improvements. An addition to the powerhouse will be erected and the tipple and all company buildings will be given a general overhauling.

A balanced Marcus screen is to be installed for the **South Fork Coal Mining Co.** in its retarding conveyor tipple at South Fork.

The M. A. Hanna Co. has purchased two cylinder Hardinge Conical Ball Mills to complete their anthracite grinding installation at the Lytle Coal Co. collieries, Minersville. These two mills were installed as a result of the successful operation of the first unit, which is now grinding anthracite culm for burning under boilers.

A State charter has been issued to the **Montour Coal Co.** of Pittsburgh, with a capital of $15,000 and J. E. Kerin, Moon Run, treasurer. The incorporators are: N. P. Sasso, Crafton; J. E. Kerin, and Frank Aubel, Moon Run.

The tipple at the mines of the **Quemahoning Coal Co.,** at Wells Creek, Somerset County, was recently burned. The loss will reach $20,000. At the same time the fan-house was wrecked with a charge of dynamite. The mines of the Quemahoning company are operating and strikers are blamed for the fire and explosion.

An involuntary petition in bankruptcy has been filed against the **Fidelity Coal & Coke Co.,** Pittsburgh, and a receiver has been appointed.

As soon as the anthracite suspension ends, the **J. S. Wentz Co.**, of Hazleton, controlling five collieries, will push a number of improvement projects. The big stripping job at Hazlebrook will be rushed. At Raven Run a new breaker will be erected and a large number of cottages will be put up for employees. The former McTurk colliery, at Girardville, will be electrified.

A state charter has been issued at Harrisburg to the **Arthur Coal Mining Co.**, of Blairsville, the purpose of which is mining of coal and the manufacture of coke. The capital stock is $10,000 and the treasurer is R. M. Wilson, Blairsville. The incorporators are D. E. Brown, Punxsutawney; Joseph Dellafiora, Blairsville and J. M. Stetts, Punxsutawney.

The office of vice-president of **W. J. Rainey, Inc.**, made vacant by the resignation of **L. L. Willard** will not be filled, according to information given out at the offices of the coke company in Uniontown. **John Sincock**, general superintendent for the company, will assume the work heretofore devolving on the vice-president.

The output in the central Pennsylvania field for May was 12,622 cars, as against 11,915 cars in April. Under normal conditions, the district should have produced 80,000 cars in each of these two months.

The Central Pennsylvania Coal Producers' Association named **H. J. Meehan**, of the Cosgrove company, Johnstown, **B. Dawson Coleman**, of the Ebensburg Coal Co., Ebensburg, and **Charles O'Neil**, secretary of the association, as a temporary committee to represent Herbert Hoover in carrying out the program to prevent speculation in coal.

E. N. Eddy, secretary and treasurer of the E. L. & W. Coal Co., with headquarters at Fairmont, was a visitor in Uniontown, Pa., early in the month.

B. M. Chaplin, vice-president of the Monongahela Coal Association, was a recent visitor in Pittsburg.

It will probably be several months before the **Hudson Coal Co.** can reclaim its mines or estimate its damages wrought by the recent flood at Carbondale. Nos. 1 and 3 Powderly mines are completely filled with water. The work of changing the course of the water into the Fallbrook Creek from the openings in the mines on North Scott St. has been completed, but it was not until hundreds of men working day and night were pressed into service and a tremendous amount of money expended.

Fire completely destroyed the breaker of the **East Point Coal Co.**, at Pond Creek, north of Hazleton. The fire is a mystery, as fires had been drawn there last February, owing to the glutted condition of the coal market, the miners' suspension now under way preventing a resumption later on. The loss is fixed at $50,000. The company is controlled by a group of Scranton capitalists.

TENNESSEE

The Vasper mine, owned by the La-Follette Coal & Iron Co., Vasper, has started operations after having been closed down for six weeks. About 75 men resumed work. Of these about 45 or 50 were formerly employed. Officials announced that former employees were occupying company houses. These men would have to resume their place in the mine or vacate the houses. There has been an influx of men at Vasper and the houses were needed for the newcomers unless the former employees went to work.

The Durham Coal & Iron Co. has announced that the mines at Graysville, which have been idle for the past year, would be placed in operation at once in order to meet demands from Northern and Eastern points. It was at the same time announced that another mine at Snoddy would be reopened as soon as sufficient miners could be employed.

UTAH

The Carbon County officials have withdrawn the special deputies from the coal camps, owing to inability to finance them any longer. Efforts to get the state to take up the work of the guards have failed. The foreigners have ignored the order to turn in their arms and no warrants have been issued for the arrest of any of them so far. Conditions are quiet, but it is feared that a clash may come at any moment as a result of agitation by the radicals.

Base rates for workmen's compensation insurance paid by Utah operators have been reduced from $4.30 to $3.90. The change was advised by Commissioner O. F. McShane, who said his investigation showed conclusively that the old rates were much too high.

A petition of three former employees of the **Blue Seal Coal Co.**, of Scofield, requests that the company be declared bankrupt. They claim their wages have not been paid.

D. W. Rawson, of Ogden, doing business as the **Rawson Coal Co.**, has filed a petition in bankruptcy. Liabilities are $16,585.23 and assets $8,862.43, of which $2,700 is claimed to be exempt.

The Rock Ledge Coal Co., of Salt Lake City, has been granted permission by the Securities Commission to sell $60,000 worth of first mortgage 8 per cent 20-year bonds.

VIRGINIA

V. Dichmann, manager of the Norfolk offices of Harris, Magill & Co., for a number of years, has gone to New York to assume active charge of the headquarters of the company. He is succeeded here by **Saunders Wright**, formerly manager for Callaghan-Atkinson Co., which went out of business.

An effort is being made to reorganize the **Sewalls Point Coal Exchange**, which ceased to function a month ago, on a demurrage basis. It is proposed to have dealers continue to ship through the exchange to their various classifications, thereby getting the benefit of their debits and credits, which is not the case at Sewalls Point now. S. T. Snead, manager of the exchange, is winding up its affairs.

WASHINGTON

A large party of Czecho-Slovaks from the Lehigh field in Pennsylvania have left for Seattle, where they have secured work. More will depart soon, entire families being booked to go. The men were miners employed at the anthracite collieries, and have been idle since the suspension began.

The results of the semi-annual election of mine councilmen at the mines of the **Pacific Coast Coal Co.** have been received, and show an encouraging percentage of votes cast in the various zones. With the new men in office, all the representatives of the men in the mines councils are elected men, half holding over until Dec. 1 next, and the other half—those just chosen in the elections—remaining until June 1, 1923. Those recently elected are to serve one year.

WEST VIRGINIA

Suit has been instituted in the Circuit Court of Kanawha County, against the **Dana Coal Co.**, the plaintiff being Charles C. Dickinson, of Charleston, who seeks damages to the extent of $68,000, claiming that the defendant company has mined across his boundary line without permission. The law prescribes a fine of $500 for every offense of this nature but the plaintiff is seeking to secure reimbursement for the value of the coal it is alleged the defendant has mined with his boundaries.

Suit has been brought in the Circuit Court of Fayette County by the **Maryland Coal Mining Co.**, against the **Atlantic Coal & Iron Co.**, operating mines at Bachman and at Cataract. It is alleged that the defendants purchased the property in January, 1921, at a price of $350,000 and it is further alleged that there is $124,312 unpaid on the purchase price and that defendants are dismantling the mines and preparing to abandon operations. Four cars of material have been shipped, it is alleged, and further shipments have been stopped by levy on personal property.

Clarksburg business men have organized the **Will-Earl Coal Co.**, which will engage in the coal business on a small scale, having a stock of $10,000. Headquarters of the new concern are to be in Clarksburg. Conspicuous in connection with the new company are: E. O. Horner, E. L. Rogers, E. T. Rogers and E. A. Barlett, all of Clarksburg.

Morgantown business men have launched the **Poland Co-operative Coal Co.**, which will operate in the Monongalia field. This company has a capital stock of $10,000. Offices are to be at Morgantown. Leading spirits in the new company are George Poland, William Kearns, Louis Kennell, P. P. Sharon and V. M. Conner of Morgantown, W. Va.

Fire, believed by company officials to have been of incendiary origin recently destroyed the drum-house of the Opekiska mine of the **Superior Connellsville Coke Co.**, at Opekiska, making it necessary to suspend operations. It will be necessary to install a new hauling system. The drum-house destroyed was on a hill about 700 ft. above the tipple. This company lowers its coal from the mine mouth through an incline system.

The Triangle Coal Co., is a new concern which will operate on a small scale in the Pocahontas region, this company being capitalized at $$25,000. Offices of the company are to be established at Bluefield. Active in effecting the preliminary organization of the company were: T. N. Daugherty, of Pinson Fork, Ky.; William B. Crawford, J. L. Ellis, John Roberts and M. M. Crawford, of Bluefield, W. Va.

Tracts aggregating 8,000 acres of land underlaid with coal across the river from Hinton in the angle formed by the junction of Glade Creek with New River, have been purchased from various owners by the Eastern Coal & Mining Co., a Baltimore corporation, which plans development on a large scale. The purchase price aggregates $600,000. A railroad is now being built up Glade Creek to serve the mines to be opened on the property.

Lloyd Bailey has resigned his position with the Crescent Fuel Co., to accept a position with the Wentz Company, in Clarksburg.

Captain R. R. Smith, of Huntington, one of the well-known operators of southern West Virginia, has gone to Maine to spend several weeks fishing. He spent a day or so on his way to New England at Washington attending the conference between Secretary Hoover and coal operators.

A large tract of coal and timber land in Wyoming County has been acquired by **Charles W. H. Crane**, of Cincinnati, **A. J. Dalton** and **John A. Kelly**, of Huntington, from the Cole & Crane Real Estate Trust. This property consists of about 52,000 acres on the Guyandotte River and its tributaries, extending on both sides of the river from Pineville, the county seat, to the Logan County line.

President E. E. White, of the E. E. White Coal Co., was a visitor in the capital about the first of June.

BRITISH COLUMBIA

The provincial Department of Mines reports a very large increase in coal output in the provincial fields of Crow's Nest, Nicola, Princeton and Vancouver Island. Last year for the first quarter the output was 637,333 tons. This year it is 730,355. There was an increase in every field, but the Crow's Nest showed the largest with 52,823.

OUTPUT FOR FIRST QUARTER OF 1922.

Mine.	Tons. 1922	1921
Vancouver Island District		
Canadian Western Fuel Co.	179,386	150,896
Canadian Collieries (D) Ltd.,		
Comox	81,022	113,177
Extension	57,645	47,471
South Wellington	22,859	21,502
Granby Cons. M. S. & P. Co.	76,940	57,035
Nanoose Wellington Collieries	25,851	15,104
Old Wellington	1,602	496
Total	445,305	405,681
Nicola-Princeton District		
Middlesboro Collieries	18,249	20,795
Fleming Coal Co.	9,439	8,667
Coalmont Collieries	31,766	13,609
Princeton Coal & Land Co.	5,988	1,806
Total	65,442	44,877
Crow's Nest Pass District		
Crow's Nest Pass Coal Co., Coal Creek	133,623	95,394
Michel	88,011	72,276
Corbin Coal & Coke Co.	17,974	19,105
Total	239,608	186,775

ONTARIO

The trial of Hiram F. Slater and Leslie J. Thompson, his son-in-law, promoters of the insolvent **Nukol Fuel Co., Ltd.**, opened in Toronto on June 7. Both men are charged with conspiracy to defraud the company and the public and to affect the market price of the stock of the company. The second and third counts embody the stealing and receiving of $400,000 belonging to the company. There are ten additional counts against Slater for forgery. There are between seventy and eighty witnesses and the case will likely last about two weeks.

E. W. Hartland, manager of the Pittsburg office of the Fish Coal Co., Toronto, spent a few days in Toronto on his way back after attending the convention of the American Wholesale Coal Dealers' Association, in Detroit.

NEW BRUNSWICK

The Consumers' Coal Co., of St. John, has opened new offices. Heretofore this company has had its office at the coal yards. The company is one of the largest retail and wholesale coal firms in eastern Canada, although organized only eight years ago.

WASHINGTON, D. C.

The Supreme Court, on motion of Daniel Davenport, attorney for the coal company, has postponed for 90 days the taking effect of its mandate in the **Coronado Coal Co.** case, in order to permit application to be filed for rehearing.

The government will oppose further delay in enforcing compliance with the **dissolution decree in the Reading coal case.** Solicitor General Beck has announced for the Department of Justice that if the court is requested by counsel for the coal interests to withhold issuing the mandate, pending filing of a petition for rehearing of the case, that the government will oppose granting the motion. He contends that the appeals in this case have already been argued twice before the court and that to withhold the issuance of the mandate pending petition for rehearing will further delay carrying out the dissolution order until next fall.

Because of its interest in the accounts of the **Tidewater Coal Exchange** which since the war has become bankrupt, and whose affairs have been the subject of court litigation, the Railroad Administration has requested the Supreme Court to review the decision of the lower court involving credits and debits of the exchange. The motion has been supported by the Solicitor General, acting on behalf of the government for the Department of Justice. The government's brief in the case points out that the Railroad Administration has claims of $971,000 against the exchange, of which $750,000 is for demurrage.

The Rocky Mountain Fuel Co., has requested the Supreme Court to review and set aside the decision of the Circuit Court of Appeals for the Eighth Circuit in a damage suit alleging breach of contract brought against it by the **Consolidated Coal & Coke Co.** The Consolidated company obtained damages of $42,057 in the lower court from the Rocky Mountain, alleging that the Rocky Mountain company had failed to live up to a contract entered into in 1914 for the sale of 125,000 tons of coal a year for five years as mined by the Consolidated company. Deliveries were made by the Consolidated to the Rocky Mountain for slightly over a year, but as the Rocky Mountain company failed to take the stipulated monthly tonnages, it was notified in December, 1915, that it considered that the Rocky Mountain had breached the contract. The Rocky Mountain company contended that it had lived up to the contract and ordered all coal from the Consolidated company for which it could find a market.

J. D. Northrop is in New Mexico making a special examination on the east side of the San Juan Basin in connection with coal leasing work.

Suit has been filed in the District of Columbia Supreme Court by L. N. Rosenbaum & Co., of New York, to recover $528,300 from William V. and Eldridge R. Boyle and James C. Robertson in connection with the formation of a corporation known as the **Empire Kentucky Coal Co.** The plaintiff states that after it sold 99,000 shares of stock the defendants refused to proceed with the incorporation of the company.

The Supreme Court has declined applications which had been made requesting it to review the complaint of the **Rocky Mountain Fuel Co. vs. the Consolidated Coal & Coke Co.**, involving coal contracts, and the case of the **Akansas Anthracite Coal Land Co. vs. Stokes,** regarding mine management.

Coal Resources of the Monongahela River region were referred to in a recent speech in the house by Representative Kelly, Pennsylvania. He said that in 1920 the coal shipments over the river amounted to twenty-four million tons. He said that upstream improvements to the river are essential as the coal in the lower reaches is practically exhausted. He said railroad transportation will not meet the situation because of the physical character of the land, and the steel industries cannot provide space necessary for incoming cars, for switching and for empty cars. In five miles from the river in Pools 7 and 8 there are hundreds of millions of tons of coal in the Sewickley vein alone, which can be handled to the Pittsburgh district by water at a saving of 50c. a ton.

The Supreme Court has declined to review the decision of the lower court in the case of the **Spring Coal Co.**, vs. the **Bethlehem Steel Co.** The coal company contended that it was entitled to a higher price for coal furnished the Bethlehem Company under government prices during the war because coal it sold to the steel company was exported, and the fuel administration allowed higher prices for exported coal over that for domestic use. The court also declined to review the decision of the lower court in the case of the **Delaware Steamship & Commerce Corporation vs. the New England Coal & Coke Co.**

Traffic News

The Perry Coal Co., of St. Louis, in a complaint to the I. C. C. alleges unreasonable rates on coal from its mines in Illinois to various interstate points.

The Illinois Coal Traffic Bureau has been authorized to intervene in the complaint of the **Perry Coal Co.**, which involves rates on coal from mines in Illinois to interstate destinations.

The hearing scheduled by the I. C. C. at Denver, June 22, in the complaint of the **Colony Coal Co.**, has been postponed to a date to be later announced.

At Washington on July 12, the commission will hear oral arguments in the complaint of the **Little Fork Coal Co.**; July 14, the complaint of the **Clay County Coal Operators' Association**; July 19, the **Detroit Coal Co.**

The railroads having suspended the schedules, the I. C. C. has vacated its proceedings in the matter of rates on coal from Virginia mines to points in South Carolina.

In a complaint to the I. C. C., **Gottlieb Bertsch**, of Kendallville, Ind., alleges unreasonable rates on coal from producing points in Indiana to Kendallville.

Effective June 15, freight rates on domestic coal from Utah to all main line points in California on the Western Pacific R.R. will be reduced $1.25 a ton. There will also be a reduction on bunker coal of 85c. a ton. To points not on the main line of the California roads and where the rate is more than $7.25 per ton, the reduction on domestic lump will be $1.25 a ton also. These reductions are subject to the confirmation of the I. C. C.

In the complaint of the **McKell Coal & Coke Co.**, an I. C. C. examiner recommends that the rates on coal from mines on the Kanawha, Glen Jean & Eastern R. R. to points on the C. & O., and connections are unreasonable.

In the complaint of the **Oliphant-Johnson Coal Co.**, the I. C. C. decides that the rates on bituminous coal from Seifert and Turner, Ind., to Sandusky, Ohio, is unreasonable. The railroads are directed to establish rates before Aug. 26, which do not exceed the rate from the Linton-Sullivan district.

The report of the **Virginian Railway** for the year ended Dec. 31, 1921, shows a net income amounting to $2,937,732 after all taxes and other fixed charges. This is equivalent to $4.92 a share earned on the $31,271,500 outstanding common stock after allowing for 5 per cent on the cumulative preferred stock. Taking into consideration $2,308,000 received in 1921 for rent of property during the Federal Control period, the report indicates a total net income of $6,245,827, equivalent to $12.30 a share earned on the common stock. Back dividends on the preferred stock totaled 35¾ per cent up to Feb. 1, 1922.

The case before the I. C. C., involving rates on coal from Kentucky, Tennessee and Virginia, to Northern and Northwestern points, has been assigned for hearing before an examiner at Minneapolis, July 3.

The complaint of the **Wasatch Fuel Co.**, and the **Jeremy Fuel & Grain Co.**, have been assigned for hearing at Salt Lake City, July 6.

Reports from the L. & N. show that a large percentage of the coal being mined in Kentucky and other Southern states is being routed over its lines. Two hundred coal cars are turned over to the L. & N. every day at Mt. Vernon, Ill., by the Big Four, which is said to have 5,000 empty cars on track. Fourteen extra engines were recently put on the Evansville division of the L. & N., and fourteen more are being ordered immediately.

Association Activities

Retail Coal Dealers' Association of Texas

The Seventeenth Annual Convention of the association was held in Greenville, Tex., May 15 and 16. After hearing several addresses on the first day, the visiting coal men gathered for a banquet at the Chamber of Commerce Hall. On the second day various objectives of the association were outlined for the coming year, among them the endeavor to secure lowered and seasonal freights and to combat any move for government control of the coal industry. New officers are Lee M. Pool, of Greenville, president; H. S. Trewitt, Dallas, vice-president; N. N. Martin, of Vernon, second vice-president, and C. R. Goldman, of Dallas, secretary-treasurer. Additional members of the Executive Committee are Messrs. Lacy, of Waco; Bibb, of Ft. Worth, and Bailey, of Paris.

Monongahela Coal Operators' Association

That plans may be on foot to start up the mines in the Morgantown District of West Virginia was indicated at a meeting of the association held in Pittsburgh on June 2. The members of the association, first of all met the officials of the Pittsburgh & Lake Erie, the Pennsylvania and the Monongahela R. R. in conference, the announced purpose of the conference being to discuss traffic condition along the Monongahela and elsewhere. Stress is laid on the fact that the operators and miners in the Morgantown field have no controversy and that the sole reason for a strike was because the miners belong to the United Mine Workers. N. M. Chaplin, of Morgantown, vice-president of the association, presided. Mr. Chaplin, speaking for the association, stated that through the Morgantown region miners were displaying a willingness to work. Another subject discussed was the reduction in freight rates and the effect of such a reduction on mine operators and carriers. As an outcome of the conference with railroad officials, preliminary arrangements were made for immediate and adequate facilities for transporting such coal as might be produced in the event that resumption of operations might become necessary.

Coming Meetings

National Safety Council. Eleventh annual Safety Congress at Detroit, Mich., Aug. 28 to Sept. 1. Executive secretary, W. H. Cameron, North Michigan Ave, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

Colorado and New Mexico Coal Operators' Association. Annual meeting June 21 at Denver, Col. Secretary, F. O. Sandstrom, Boston Building, Denver, Col.

American Society for Testing Materials will hold its twenty-fifth annual meeting June 26 to July 1, 1922, at Atlantic City, N. J., with headquarters at the Chalfonte-Haddon Hall Hotel. Assistant treasurer, J. K. Rittenhouse, Engineers' Club Bldg., Philadelphia, Pa.

American Institute of Chemical Engineers will hold its summer meeting at Niagara Falls, Can., June 19-22, with headquarters at the Clifton Hotel. Secretary, Dr. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

Mine Inspectors' Institute of the United States of America will hold its annual meeting July 11, 12 and 13 at Chicago, Ill. Secretary, J. W. Paul, 4800 Forbes St., Pittsburgh, Pa. Announcement regarding headquarters will be made later.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va. **The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers** will again hold its annual meeting in the same building during the exposition.

National Exposition of Chemical Industries will hold its eighth national exposition at the Grand Central Palace, New York City, Sept. 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.